

THE
SURGICAL CLINICS
OF
NORTH AMERICA

DECEMBER 1923
VOLUME 5 — NUMBER 6
KANSAS CITY NUMBER

INDEX NUMBER

PHILADELPHIA AND LONDON
W B SAUNDERS COMPANY

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THE SURGICAL CLINICS OF NORTH AMERICA

Volume 3

Number 6

CLINIC OF DR ARTHUR E HERTZLER

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TWO STAGE OPERATIONS IN ACUTE STRANGULATION OF THE GUT

Case I —Strangulated Femoral Hernia with Gut Necrosis —
A married woman aged fifty six was brought into the hospital for the closure of a fecal fistula in the groin

History —A former pupil called me by telephone stating that he had a patient who had strangulated femoral hernia of more than two days duration and judging from local and general appearances the gut was likely necrotic What should he do? I advised that he cut down on the gut drain *in situ* forming a fecal fistula thereby standing the best chance of saving the patient's life

The circumstances of the development of this fistula was as above indicated In the right inguinal region just below Poupart's ligament was a granulating area in the midst of which fecal contents were escaping The skin about the granulating area was somewhat excoriated from the irritation of the intestinal contents The skin above Poupart's ligament was normal The patient's condition was excellent and only the discharging fistula separated her from a normal state

Treatment —The indications were to secure an anastomosis of the gut and to dispose of the fecal opening The intra abdominal work obviously must be accomplished without soiling the wound by the discharges of the fistula

The fistulous area was covered with wet packs of formalin solution and this covered

S. M. S. Medical College, Jaipur
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by a sheet of rubber protective sutured to the skin along the line of Poupart's ligament. The area above this ligament was then prepared in the usual way. A right rectus incision was

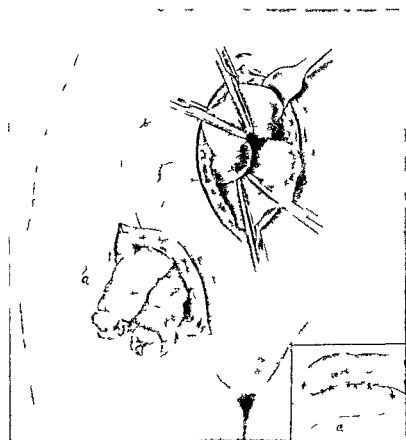


Fig 694—Sh w g th l t f th t t b f th p t
 a Sh w th d f th g t p t d g th gh th p g d P p t
 l g m t m d f th p p f l v g th t g l t b h w the
 loop f t t p t d d th po t f se d d d h w
 the d t d t m m p l t d

then made and the two ends of the gut ending in the fistula were isolated. Each gut was then grasped between two forceps (Fig 694 b) and cut. The ends of the gut ending in the fistulous opening were then cauterized and turned down for attention

later. The other ends were then closed and a side to side anastomosis made (Fig 694 c) and the anastomosed area dropped back into the abdomen. The lower ends which had been packed

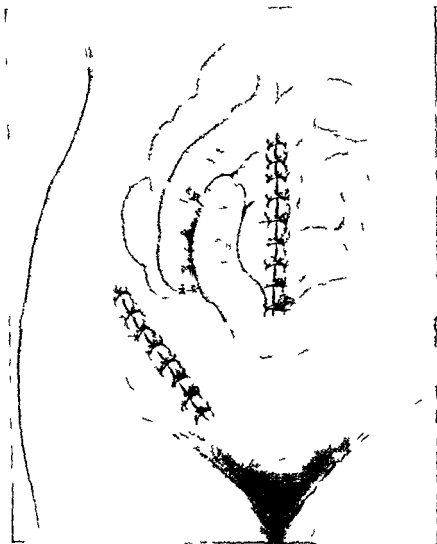


Fig 695 —The abdominal wound has been closed and the side to side anastomosis is shown *in situ*. The lower wound is shown completely closed. There should be a gauze and tube drain at the lower end.

off with lap towels were then attacked. (The rectus incision may be closed at this time [Fig 695] or protected and left open until the fistulous ends have been removed. If it is closed at once the pack must be so placed that it can easily be removed

from below) The incision made at the time of strangulation by her attendant was circumscribed and granular area gut and all freed The two end of gut together with the pack protecting them were then withdrawn This wound was then closed except a drainage opening

It is somewhat easier to prolong the lower end of the incision downward over Poupart's ligament and pulling on the end of the intestines rolling them over and outward as one approaches the fistulous opening This is the simple method and best adapted to the inexperienced The objection is that the wound will become infected about the fistulous opening and this may extend some distance upward leaving a weak scar with possible subsequent hernia This is a minor matter and can be repaired later Better this than expending too much time coaxing the guts through an opening below

After course—The wound in the abdominal wall closed ideally except for two stitch abscesses There was some supuration in the line of the lower incision but healing was complete in a month Neither scar has weakened since the operation and the patient has remained well

Comment—By so operating one has a clean abdomen in which to make the anastomosis and one can protect the area with a fair degree of certainty from contamination The second operation should be so timed that the intestinal loops in the abdomen are still in a state of partial reaction because they are then in a state better to defend themselves against such infection as may inadvertently enter the wound from the fistulous area The proper time for the operation is after the patient has fully recovered from her obstruction and before all reaction in the gut coats has subsided This time may be placed somewhere between the third and eighth week It is true there will be more trouble with adhesions resulting from the obstruction than would be the case after the lapse of a few more months but the added safety will more than compensate for the increased difficulty in technique Besides the patient is always anxious to be rid of the stinking mess at the earliest possible date

By operating in two stages the mortality is greatly reduced

because the patient disturbed by the strangulation is not in good condition to stand in operation of a duration of half an hour or more. What is equally as important the gut at the time of strangulation may not show the extent of probable necrosis. After reaction has taken place one may with certainty select a point of unquestioned viability.

Case II —Necrosis of the Gut from a Strangulation Over a Meckel Diverticulum—A farmer aged forty six was brought to the hospital for relief of a gut fistula.

History—Following an acute generalized abdominal pain he had vomiting and distention. The diagnosis of acute strangulation was made. At operation a loop of gut was found imprisoned behind a band from a Meckel diverticulum. A segment of gut about 15 inches in length was intensely black and showed no evidence of viability after the usual tests. This loop was pulled to the left of the incision including 4 inches of apparently healthy gut. The gut was carefully sutured to the peritoneum and then the line of suture packed off with gauze and the remainder of the wound closed. The loop of necrotic gut reached to a point on the level of the anterior superior spine. This terminus of the loop was carefully walled off from the wound and drained. This relieved the intestinal obstruction. In about a week the necrotic gut had sloughed and the remaining stumps of healthy gut were trimmed off to the level of the wound now safely healed.

The patient now enters the hospital to be rid of the intestinal fistula. This is diagrammatically represented in Fig. 696. It consists of a double barreled tube opening on to the surface of the abdomen.

The first act was to secure an opening from loop to loop. This was accomplished by the well known stunt of cutting across the septum by gradual pressure of a spring forceps. These forceps are passed with one limb down either gut lumen. The spring presses the two gut surfaces together securing adhesion by the pressure of these two surfaces (Fig. 696 a). After about ten days the tissue grasped by the forceps had caused necrosis and

a state shown in Fig 696 *b* will have been obtained There

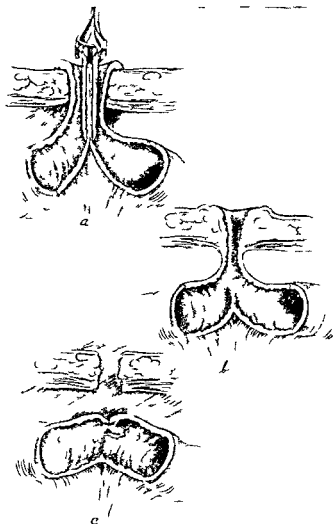


Fig 696—*a* Sh the f cep lmb in the loop p ss g th
 rf t g th d t ca seth mt unt dth sept mt disappe r
b sh w th lt g fist l ft th f ceps ha c t th o gh how
 th fist l d sect d t dth d t m d n

is a restoration of the lumen of the gut with a fistulous opening leading to the surface of the abdomen The problem then

is to get rid of the small fistula remaining. The opening was surrounded by a subcutaneous suture shutting it off. The abdomen was cleansed and the opening sealed with collodion. The fistulous tract was then circumscribed by an elliptic incision and followed down to the gut, cut off and inverted, and the gut dropped (Fig. 696 c).

A simpler way is to dissect out the fistulous tract down to the peritoneum, only tying it off and closing the wound above. This saves opening the peritoneal cavity, but leaves the gut fastened to the anterior abdominal wall.

It is well to allow some weeks or months to elapse after the forceps have cut through the septum before the closure of the opening in the abdominal wall is attempted. Once the fecal current can pass direct, the opening quickly narrows down materially.

The theoretic objection that when the gut is left attached to the abdominal wall a new strangulation may form later, must be admitted. This, however, has not happened in my experience.

Comment—By following the conservative line indicated in the case here reported, improves enormously the prognosis. Immediate anastomosis in acute obstruction has a very high mortality in the hands of the experienced operators, and in the hands of the novice is nearly always fatal. There is the objection that a nasty fistula is produced and the convalescence is much prolonged. But a convalescence, even if prolonged, is better than a nice smooth fatality.

CHRONIC TRAUMATIC EMPYEMA CAVITY LINED BY SKIN FLAP

History—The patient a farmer aged forty six came in with a complaint of a sinus in his left side.

One year ago the patient was accidentally hit in his side while moving a stove. There was no breaking of the skin no swelling and no considerable soreness. One month later he fell and struck the same side against a sharp object. There was slight swelling following but no break in the skin. There was soreness for a short time with the swelling but rubbing the site caused the swelling to disappear. In one month a permanent swelling appeared. He worked as usual and paid no attention to the swelling. This spot remained all winter and at harvest it broke and began discharging pus and has continued discharging since. Three weeks ago the patient caught cold in the sinus followed by shortness of breath and temperature to 105° F. Osteopathic treatment relieved the fever in two or three days and there has been no fever since. There has been occasional cough and he has gotten shorter of breath the last week or two.

His general health has always been good and his appetite remained good until the past week. There was no loss of weight until the last three weeks but during this time he has lost 17 pounds.

Examination (W. W. Holley) —Patient does not look acutely ill. Nutrition is fair. The skin warm and elastic. The eyes react to light and accommodation. The teeth have some repair work. There is some retraction of the gums from pyorrhea. The chest is large. Symmetric respiratory movements free and equal above somewhat lessened below on the right side. There is a sinus over medial part of sixth rib anteriorly on the left side which is discharging pus. Resonance on the right side and the upper part of the left is normal. Below fourth rib on the left there is

Postoperative Course—10/11/19 No postoperative shock
Wound drainage considerable thin yellow pus

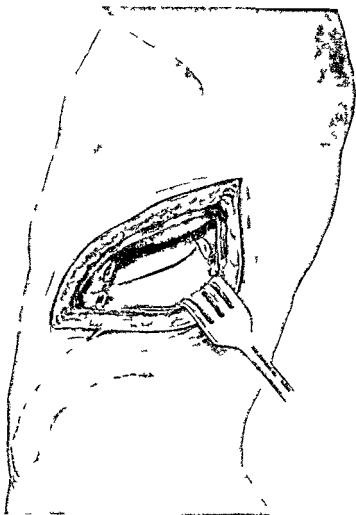
10/12/18 Temperature 102.5° F today This is the highest since operation Pulse 100 Much thin yellow pus discharged

10/14/19 Wound dressed gauze pack around the drainage-tube removed (W W H) Temperature 100.4° F From this time on the patient's course was rather unchanged There was considerable thin purulent discharge every day This changed at the end of a week from yellow to a pinkish yellow It did not seem to increase in amount even up to the day of his dismissal from the hospital He ran a mildly septic course The temperature dropped to about 99° F every morning and went to 100° to 101° F in the evening The patient suffered no pain The drainage tube was not removed or shortened The pulse ran from 80 to 100

Condition at Dismissal—The original drainage tube was left in place and not shortened Considerable pinkish yellow thin pus discharged from wound every day Temperature 99 to 101° F The patient feels well and has a very good appetite He was allowed to go home with instructions to return in a month for examination

1/16/20 Patient returned for examination He has been draining a great deal of pus ever since leaving the hospital In the last two months he has been irrigating the cavity with iodin on the advice of his physician He has run a temperature of 99.5° to 102° F ever since leaving He now has white blood cells 9200 temperature 99.6° F pulse 112 Three weeks ago his feet started to swell They would go down every night and get worse in the daytime No shortness of breath He has lost about 20 pounds in weight since the first operation

Examination—Patient looks well nourished but acutely ill Head and neck negative Lung expansion poor on the left side Left chest practically immobile Decreased resonance to dullness on percussion over whole lower left half of the chest Breath and voice sounds undemonstrable over the dull area. No cardiac murmurs rate 110 Apex beat not found



Fg 697—Th b h w se t d w th mpl l t th f t l
 pl Th pl w m d f p bl t g th w th th cal
 ca pl q mbedd d t Th d tt dl th d f th bd m n
 h w th f th p po d fl p (Th fl p h l d b t l t w d g
 th t th h w t)

Abdomen negative Extremities negative except for slight edema of legs and feet

Diagnosis—Chronic empyema left side Defective drainage



Fig 698 —The forceps are shown grasping the apex of the flap. The drawing is faulty in that the flap is shown entirely too small and is printed too much forward. The flap must be directed to the apex of the cavity where it may be

Treatment—Some means of obliterating the cavity or at least establishing permanent drainage must be attained. Following the idea of Beck it was decided to line the cavity with skin.

Operation (1/17/20) Under local anesthesia two ribs were resected and the empyema sac opened widely (Fig 697). The calcareous deposit already mentioned on the parietal pleura was removed. A loop flap of skin was outlined on the abdominal wall below the opening (Fig 697) and dissected up to the margin of the wound and turned into the sac. Having had trouble in previous operations of this kind in keeping the flap pointing to the top of the cavity I attached a 7 inch forceps to the apex of the flap and then pushed forceps flap and all into the opening (Fig 698). By suturing the handle of the forceps to the skin and fascia the flap had to stay in place. A gauze tampon held the flap against the visceral pleura.

After course —1/17/20 No operative shock. Temperature 99.5 F pulse 120 tonight.

1/18/20 Pulse 120 temperature 102.4 F tonight. Wound draining much pus. Patient complains very little. Sweats profusely almost all the time. Feels well but looks pale and sick.

1/19/20 Temperature down to 100 F today. Draining much red stained pus.

1/22/20 Complains a great deal today of the hemostat gouging him. Hemostat removed. Skin flap stayed well up in place. Temperature subsiding.

1/24/20 Gauze pack removed from abscess cavity. Much pus drainage followed its removal. The turned in flap seems firmly fixed. A smaller gauze drain was inserted.

1/30/20 Gauze drain removed and cavity left wide open. Feels well temperature 99.3 F pulse 98.

1/30/20 The granulating area around the wound covered with Thiersch grafts from the left thigh placing them as far as possible into the cavity. Grafts covered with a cage and dressed open.

2/3/20 Wound dressed. Practically all the skin grafts seem to be in place and in good condition.

Condition at Dismissal —2/4/20 Wound seems to be healing well. Skin grafts are taking. Some decrease in the amount of pus drainage. Temperature normal for a week. pulse runs from 90 to 100.

1/10/23 There is a cavity holding about a pint skin lined in its entirety The patient is entirely well

Comment—Judging from the calcareous deposit in the pleura the empyema was of long duration It seems almost incredible that it should have caused so little trouble The edges of the sinuses from the pleural cavity converging to the single external opening had thick walls and were therefore much more than three weeks in forming We may conclude therefore that we had a chronic traumatic empyema which opened spontaneously through the external wall of the chest

A misinterpretation of the history led to an unnecessary dilatory treatment It was recognized as already stated that if an abscess had broken into an unprotected pleura he must certainly have died in a few days We failed to follow this obviously correct observation to the operating room and treated him as an acute empyemic by drainage When the calcareous areas were found the error was obvious but having no equipment for a flap operation it was easy to conclude a preliminary drainage was the thing to do and that his general condition would improve under drainage But it did not improve His condition was worse on his return due to imperfect drainage than when he left the hospital Since there was no other reason for his disturbance than inadequate drainage, the more radical operation was done

The use of the forceps to hold the flap in place proved a very convenient and efficient means of solving the most annoying step of the operation

PERIRECTAL MELANOBLASTOMA DEVELOPING IN A CUTANEOUS HEMORRHOID

THE patient aged forty seven came in with complaint of pain in rectum

History—The trouble began two months ago His bowels became very constipated and on taking an enema the enema tip struck an extremely tender area It gave him intense pain From that time he has had some pain in the anal region every day The attacks of pain increased in severity and in duration until the last month since which time it has been present almost continuously Movement of the bowels did not increase it at the time they moved but just afterward the pain was intense He has watched for a discharge of some kind but there has never been any The pain is just as severe at night as in the daytime It interfered so with his sleep that he lost strength and weight

Examination—Patient is very poorly nourished poorly muscled apparently has lost considerable weight lately Eyes react slowly to light but good to distance Pupils regular tendency to be contracted Mouth and throat negative Heart inside left nipple ring about 1 cm and at right sternal border No murmurs Lagging expiration over left upper chest Does not expand as well on inflation Percussion note somewhat impaired over left upper lobe but definitely so at inferior angle of left scapula where breath sounds are increased numerous crepitant vesicular rales of a fine moist quality are heard Few rales at angle of right scapula but more of a bronchial type Left axilla contains numerous hard glands size of bean and larger Epitrochlear glands small hard definitely palpable

A small hard tender lump is found to right of anus in or just outside of anal sphincter (Fig 699) It is about the size of a hazelnut firm elastic and the skin covering it is reddened showing a deep blue color beneath The anal region otherwise is free from any trouble

Diagnosis—The circumscribed character and the location of the lesion proclaim it to be a cutaneous hemorrhoid containing a blood clot. The long duration and the degree of disability complained of are out of the ordinary but the patient is of the type affected profoundly by small lesions.

Treatment—2/22/20 Under local anesthesia the mass was burned down upon with a small electric cauterity. Instead of a



Fig. 699—Cutaneous hemorrhoid containing a blood clot.
(Drawing from the author's collection.)

clot a small abscess was opened up. The whole inside of the abscess was cauterized.

After course—2/23/20 The patient complaining of severe pain in anal region. Temperature 100.5 F. He is unable to void urine.

2/24/20 Wound infected. Much swelling and redness around wound area. Complains of much pain when bowels move.

2/25/20 Patient unable to void. About a quart of urine removed by catheterization. Still complains of much wound

pain Parts swollen and red Temperature 101 F Area very tender to pressure

2/26/20 Wound area opened up and discharged considerable pus Pain relieved Patient able to void urine No rise of temperature

Condition at Dismissal —Burned area sloughing out Small amount of foul smelling pus discharging with slough Patient feels much better Normal temperature

Comment —The trouble lines up with an infected thrombus with considerable perianal involvement save that the duration was too long and the pain too severe

Second Admission —The patient returned in two months and it was noted that the wound had not healed properly With sitz baths healing took place but a tender indurated area remained A hard lump the size of the end of the little finger with a small yellow crust formed In a week a small pimple formed at the site of old scar ruptured drained considerable yellow pus He felt good for a day or so then discharge stopped and pain started again He now has continuous pain for the past two nights very severe

Diagnosis —Pararectal abscess with possible fistula formation Because of the man's general health and indefinite findings in the right apex tuberculosis was thought of but the pain was much more intense than is usual in tubercular affections of the anal region The character of the discharge and the intensity of the pain suggested actinomycosis, but repeated examinations gave no evidence of such a possibility

Treatment —Operation General anesthetic An incision through mass with electric cautery knife revealed a circumscribed firm granular looking area 3 by 2 cm from which a little sero-purulent material drained Cauterized through and around mass Portion removed for section Clinically looks like gumma Sinus did not lead to gut sphincter not cut wound left open

After course —6/15/20 Gauze drain removed from pararectal wound Some liquid fecal drainage from rectum Wound is quite dry and clean

6/16/20 Wassermann negative

6/29/20 Has been taking sitz baths for twenty minutes daily. All induration has left except nodule size of butter bean at top part of wound.



Fig 700—Sl d f m dt enth p ia l ego Af l g d
ll i m gl d w th f ko yte d mal cells

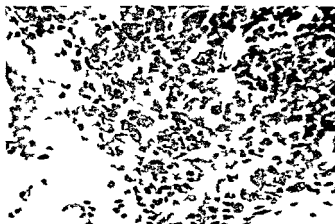


Fig 01—H gh p w f th p ec d g

7/4/20 Small hard mass described on 6/29/20 has enlarged to size of thumb and has extended over an inch superiorly and posteriorly around rectum. Is firm and movable. Has been taking twenty minute sitz bath daily.

7/5/20 Discharged to return in a week or ten days for observation. Mass described above is very tender making a rectal examination practically impossible.

Histologic Examination—Slides made from the tissue removed indicated neither syphilis nor tuberculosis. On the contrary masses of rather large cells were found (Figs 700-701) which were arranged in groups throughout the slide with masses of connective tissue between containing few nuclei. The cells

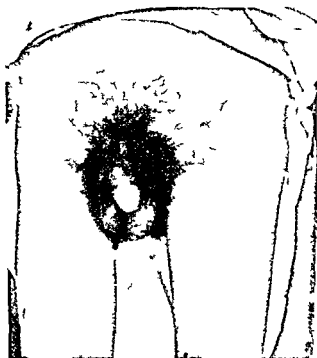


Fig. 102—Large lateral inguinal lymph glands

looked neoplastic but the arrangement of the groups and the general character of the tissue made it seem likely that it was granulomatous.

Third Admittance—He returned in two weeks presenting the following findings. Abdomen scaphoid rather tense. No masses, no tenderness. Left inguinal glands somewhat tender, greatly enlarged, two glands 4 by 2 cm., hard and firm, somewhat tender, numerous smaller hard individual glands on right (Fig. 102). Knee jerks sluggish, negative Babinski. The rec-

tum presents a mass about 3 cm long by 1 $\frac{1}{2}$ cm in diameter at lower left border of external sphincter (Fig 703) firm feels like cartilage Just above this is a boggy bulging area about 1 cm in diameter red very tender and to the left of it what appears like the opening of a sinus

9/14/20 Under local anesthesia the larger of the two glands in right inguinal region was removed The section of this showed a grayish yellow surface containing here and there

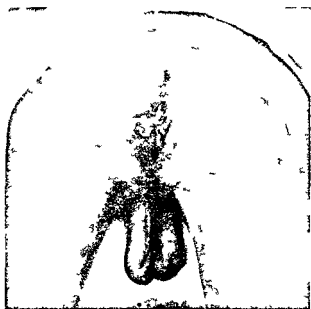


Fig 703—Large gland removed from the left thigh
millipedes had been on the yellowish part

yellowish areas The slide shows definite malignancy (Figs 704, 705) of probably melanoblastic origin from the chromaffin cell of the mucocutaneous margin of anus

The patient died four months later of progressive weakness

Comment—The terminus is easy to understand but the relation of the malignant state to the conditions when he was first examined is not so clear Melanoblastomas are painless throughout their course A blood coagulum in a pile is very

painful. It is safe to assume that in the beginning it was a cutaneous hemorrhoid. Why the lesion did not heal when opened



Fig. 704.—Slide from the inguinal lymph gland. The typical nest formation characteristic of the melanoblastomas is shown.

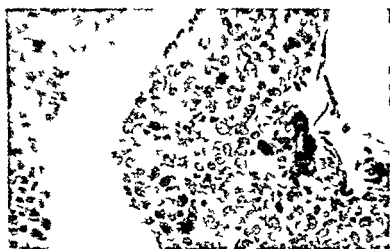


Fig. 705.—High power of the preceding. The large cells with ovoid cells and prominent nuclei can be seen.

may be explained by the fact that there was an extension beyond the area drained. It was only after the excision of the mass because it was thought to be tubercular that definite neoplastic

characters developed. Just what, why, and when the transition occurred cannot be stated.

A very few, something like five or six melanoblastomas under the name of melanosarcomas or melanocarcinomas have been reported in the literature. One of them like this seemed to have started in a cutaneous pile. In none of them was the course of the disease followed for so long a time.

This serves once again as a warning not to be too sure in prognosis. A little innocent pile may cause one chagrin and humiliation.

DESCENSUS AND DISPLACEMENT OF THE UTERUS IN A YOUNG WOMAN

A WOMAN aged twenty four comes complaining of backache and irritation of the bladder

History—She has always been healthy until the birth of her first and only child a year and a half ago. Since that time she has never been strong. The menses began the third month after childbirth and has been regular every twenty eight days without pain and lasting four days. She had much backache from the beginning. Lately this has become much worse and is aggravated by being on her feet particularly during the few days preceding menstruation. Recently she has had irritation of the bladder after urinating with a frequent desire to urinate.

Examination—The patient is well nourished but has a tired look. General examination is negative. Urine 1010 acid somewhat clouded and contains many leukocytes. There is a second degree laceration. The cervix is just without the introitus and points to the meatus. It is not lacerated and not eroded. There is some sagging of the anterior vaginal wall. The fundus is in deep retroflexion movable somewhat tender. The left ovary is palpable and tender.

Diagnosis—The displacement of the uterus and the descensus explain her symptoms. The bladder symptoms obviously are due to the dragging on it by the displaced uterus.

Treatment—The disease being a mechanical proposition the operation must be corrective. The round ligaments were shortened by the Coffey method. This brought the fundus forward but vaginal examination after the completion of the ligament shortening showed the cervix low. There was but little sagging of the anterior vaginal wall and a simple repair of the perineum would do no more than form a shelf on which the cervix might rest. A shortening of the broad ligament was therefore done by the following method. An incision was made

in front of the cervix and its anterior surface freed to just above the uterine arteries. The broad ligaments were then isolated by passing a blunt scissors under them (Fig 706). Sutures were then passed through the ligaments close to the cervix to prevent bleeding from the stump and the ligament grasped with a forceps to prevent its retraction (Fig 707). The ligament is then cut loose and freed for a distance of 1-2 inches (Fig 708). The opposite ligament is then freed in like manner. Sutures

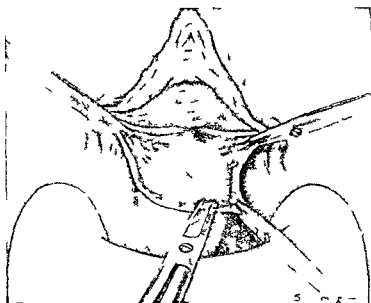


Fig 706—The blunt scissors are used to free the broad ligament from the uterus.

of No. 2 twenty day chromic gut are then passed through the tip of one ligament and through the base of the other (Fig 709). The ligatures are then tightened pushing the cervix upward as the sutures are tied (Fig 710). Closing the incision in the vaginal wall completes the operation. A repair of the perineal laceration completed the operation.

After course—The patient recovered without disturbance and was freed from her complaints.

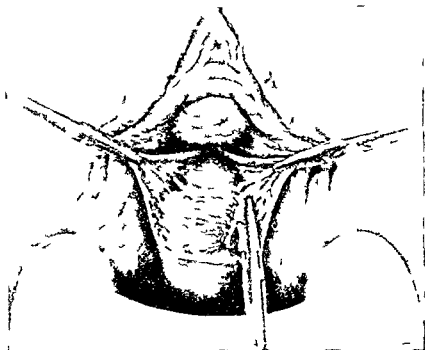


Fig 707 —Hemostatic ligatures have been placed at the insertion of the ligament. The forceps prevent retraction after it has been severed.

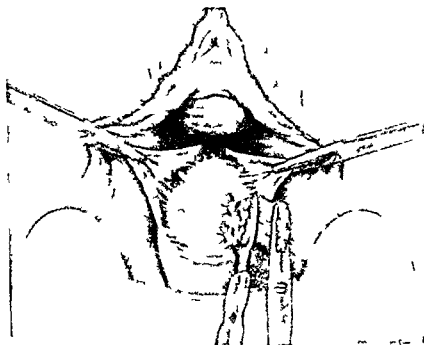


Fig 708 —The ligament has been cut and is being freed from the surrounding tissues.

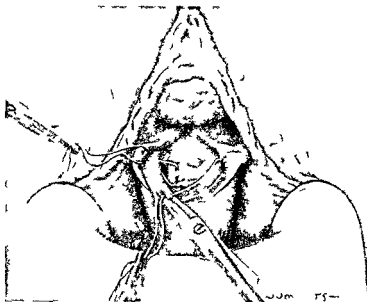


Fig 09—Th lgt p edth ghtl tp fo lgm t dth gh
th ba ft flw

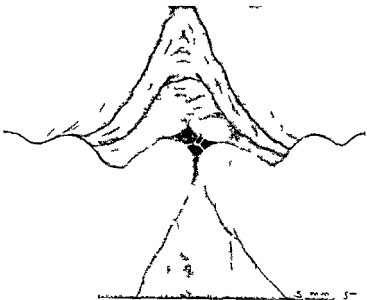


Fig 10—Th rv p hd p d db kad th t
t d

Comments—In young women who are expected to bear more children this method restores the anatomic relation to the pelvic organs without interfering with future deliveries. It is more effective than the shortening of the so-called sacro-uterine ligaments and is much more effective than shortening the round ligaments with perineal repair only. In none of the patients on whom this operation has been done has there been difficulties in subsequent labors.

TRAUMATIC ANEURYSM OF THE FIRST PART OF THE SUBCLAVIAN ARTERY FAILURE OF CURE AFTER LIGATION OF THE INNOMINATE VERTEBRAL AND COMMON CAROTID ARTERIES

MALE aged forty three An engineer came in because of a lump on his right shoulder and limitation of motion of right arm and hand and some stiffness

History (Dr Carlisle) — December 25 1921 while driving a car patient was shot with a .38 caliber revolver The bullet entered at the top of the sternum and ranged toward the right shoulder The bullet was removed by a doctor from posterior surface of right shoulder Following the shooting the right hand dropped from the steering wheel of car and patient was unable to move right arm or hand The day following a mass appeared on the right shoulder This mass at first was high on the shoulder near his neck but seems to have moved down toward the shoulder It has not increased in size The mass seems to beat with the heart At times patient thinks he can hear blood flowing through the mass From the time of shooting the arm and hand have been useless He can move the whole hand but cannot bend the fingers The hand and arm feel as if they were in a vice The hand and arm get cold easily and feel stiff The flesh does not seem sore but the bones are sore He feels fine otherwise Appetite good bowels regular and he is gaining in weight

Examination — The patient is well nourished and well developed The skin is warm moist smooth and elastic No eruptions and no general adenopathy The pupils are somewhat dilated but equal round regular and react normally No ear and ears negative The mucous membranes are of normal color Several teeth missing remaining are poorly preserved practically all decayed The tongue is heavily coated and the breath foul Tonsils are small embedded and full of crypts

There is a bilateral pulsation in neck especially on the right side. Extending up on to the neck from the right supraclavicular fossa is an enlargement about the size of a small orange (Figs 711, 12). Pulsations of this area are synchronous with heart beat. The mass is firm and smooth, firmly fixed and somewhat tender on palpation. A definite thrill is felt all over the mass. On auscultation a loud blowing murmur is heard over the mass and down into the infraclavicular fossa and over

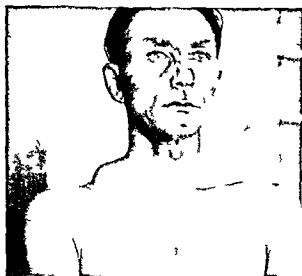


Fig 711 —A symmetrically placed mass of the supraclavicular fossa before the first palpation

the precordia. This murmur is synchronous with the systole of the heart. Just above the sternum almost in the midline there is a small scar. There is a healed incision just below the tip of acromion posteriorly. The chest is symmetric expansion good breath sounds vesicular percussion note resonant. No rales. Respiration rate 20. Heart sounds somewhat obscured by a loud late systolic blowing murmur which is heard all over the precordia but with maximum intensity over the mass in the neck. Heart sounds are regular and rhythmic. Rate 72. Blood pressure 85/50.

No masses or tenderness in abdomen Genitalia negative Both extremities are negative except for some scars on left foot The reflexes are normal There is marked atrophy of entire right arm Skin is glistening and muscles soft and flabby The forearm and hand look like they had recently been on a flat posterior splint The elbow can be flexed and extended but

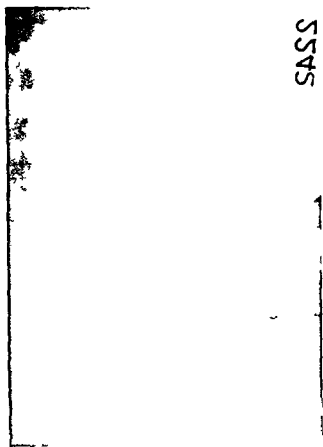


Fig 712—x ray taken before the final operation (Taken with patient lying face down)

slightly and there is partial flexion and extension at wrist but practically no movement of the fingers Nerve area not tested

Diagnosis—Traumatic aneurysm of right subclavian artery ischemic and disuse atrophy of right arm and hand That there is an aneurysm is obvious from the physical examination and that it is traumatic in origin is evidenced by the history

Treatment—Operation (11/24 '22) Ether anesthesia Incision made along the right clavicle from midline outward The sternocleidomastoid and other overlying muscles were incised The sternocleidomastoid lay completely over the aneurysm bisecting it The sac was found to be much larger than was made out externally The sac extended to within 1 cm. of the origin of the carotid artery leaving too small a space for the ligation of the subclavian artery The innominate artery was therefore dissected free and was ligated with double linen thread just below the bifurcation The sheath was ligated together with the artery Ligation caused the mass to cease pulsating The incised muscles were closed An iodoform gauze drain was put in Closure of the skin with silk worm gut

Comment—The inclusion of the sheath of the artery in the ligature was made in order that there would be less likelihood of its cutting through The recurrent laryngeal nerve was not identified but care was taken to keep as close to the sheath as possible in order to avoid it

After course—There was no vomiting following operation Some headache The gauze drain was removed by Dr Chesky on the second day Temperature went to 101° F pulse 80 the first day The subsequent course was uneventful

12/24/22 The patient was dismissed Wound well healed No pulsations over the site of the aneurysm Right arm and hand still numb at times but in general is improved No pulse made out in right arm General condition markedly improved Patient is to return for observation

Re entry—January 8 1923 the patient returned for further observation His condition he states has been good since leaving the hospital has had very little trouble with the right arm On January 4th he was seen by his home physician and a pulsation at the site of the old aneurysm was noticed

At the site of the old aneurysmal sac there is a slight pulsation On auscultation a loud murmur is heard over this area *and transmitted down over the whole precordia* The murmur is systolic in time Old incision is well healed Heart and lungs negative

Diagnosis—Essential aneurysm resulting through collateral circulation into old aneurysmal sac

Re operation—1/13/23 Novocain anesthesia Incision was made along the outer border of the right sternomastoid muscle. The common carotid and the vertebral arteries were ligated. The common carotid was ligated because it could not be told



Fig. 13—x Ray taken after last operation (Taken with patient lying on his back.)

with certainty whether or not it was contributing to the pulsation. The vertebral was large and pulsated violently. A marked diminution in the pulsation in the old sac was noted but it did not cease completely as after the first operation. A superficial gauze drain was put in. Closure with silk worm gut.

After course—1 14/23 Temperature 99.8 °F pulse 95

Feels very comfortable Coughing some and has some pain in neck Throat very dry and cannot swallow well

1/16/23 Feeling some better the past two days Wound dressed gauze drain removed Wound well healed Subsequent course uneventful

Dismissed 1/29/23 Still a visible pulsation in old aneurysmal sac Ligation of the third portion of the subclavian artery was advised but the patient was not willing to submit to further operative interference

6/16/23 The patient returned for observation The aneurysm has increased slightly in size There is a general improvement in all the functions of the arm and hand The x-ray shows the aneurysm to be about the size of an egg (Fig 713)

Summary—The complete collapse after the first operation led me to hope that the cure would be permanent Its failure to completely collapse after the second operation made it apparent that the sac was receiving blood from another source and that further operation would be necessary That the collateral circulation had been adequately restored was evident from the good pulsations of the radial and ulnar arteries

In view of the fact that the chief source of postoperative disaster has been in the cutting through of the ligature I believe it is good judgment to include the sheath with the vessel There is danger of including the recurrent nerve but a paralyzed vocal cord is a small handicap to an individual whose disabilities require so formidable an operation as the ligation of the innominate artery

BILATERAL NEPHROLITHIASIS OPERATION UNDER LOCAL ANESTHESIA

WOMAN aged fifty nine came to the hospital for the relief from kidney stones.

History (W. W. Holley) — After the birth of her last child twelve years ago she was seized eleven days after delivery by a severe chill followed by nausea and vomiting. Following this she had a dull heavy pain lasting five days under her short ribs on the left side. She was free from pain then for six weeks when the same symptoms were repeated. She had similar spells every month or two for six years. She went to Scotland and after her return was free from trouble for three years. Three years ago she had renewed chills and nausea lasting several hours. Following this she had mild attacks about every month. She consulted a distinguished urologist who told her she had large stones in both kidneys that the left kidney was abscessed and that her condition was such that operation would be too dangerous. Since then her troubles have increased. There has been much pus in the urine and sometimes she has passed large amounts of cloudy urine but there never has been suppression. She has lost some 30 to 40 pounds in weight but none lately.

Examination — Physical examination was negative except as follows: deep tenderness in right lower quadrant; reflexes hyperactive. The urine report showed variability; specific gravity 1002-1006. Albumin more than a trace. Red blood cells numerous and cloudy. Many pus cells. P. S. I. 12 per cent for two hours.

R. K. W. showed large stones in both kidneys (Fig. 114, right kidney; plate of left kidney broken).

Diagnosis — Obviously stones in both kidneys present the lesion. The large amount of pus, the continued fever, together with the opinion of the urologist previously consulted indicated a pyonephrosis as well.

Treatment—Operation (11/1/20) Because of the opinion of the urologist that general anesthesia would be extra hazardous it was decided to operate under local anesthesia. One grain of codein was given as a preliminary hypnotic. Under novocain an incision 8 inches long was made below and parallel with the twelfth rib. The kidney was closely adherent to the surrounding tissues. No attempt was made therefore to free it. The lower end was freed and the lower medial border of the pelvis cleared

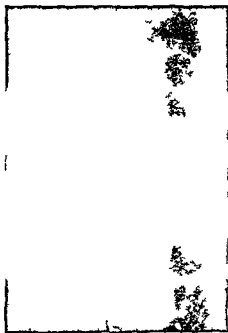


Fig 714—x Ray of the right kidney

of the surrounding tissues. The pelvis was opened with an electrocautery. Much pus escaped and a number of stones were easily removed (Fig 715). One being too large for the opening the lower pole was incised to the depth of 1 inch also with the cautery. All palpable stones were then removed. A rubber tube was passed into the opening in the pelvis and the wound closed about it. Gauze and a second tube were passed into the cavity below the pole of the kidney.

Subsequent Course—11 2 20 Nausea and vomiting followed the operation tongue dry urinary output 3 ounces in first twenty-four hours much pain. The temperature rose to 101° F and there was severe headache. After the removal of the stone and rubber drain below the kidney much urine escaped



Fig. 1.—First group of stones removed from right kidney the remainder were removed. (Compare Fig. 14.)

from the incision in the kidney pelvis. Hot packs and hypodermic morphia were used 1000 c.c. of i. d.

11 10 20 Urine 100% 12 ounces much pain. Bloody urine escaping from drainage tube. Drainage tube removed (W. W. H.)

11 17 20 Urine 17 ounces much pain some red blood cells. Vomiting and some drainage.

purulent on the left side Appetite good Feels fine The large drainage tube is to be removed today Urine output varies from 36 to 52 ounces per day

7/6/21 Dismissed with small drainage tube in left kidney region Still quite a bit of drainage from this side The small tube is still in the right kidney region Many pus cells in urine at time of discharge General condition improved Feels fine Ray shows several small stones in the right kidney

Subsequent Course—She gained 30 pounds in weight during the next six months When last examined (6/22/25) her health was excellent There was still pus in the urine and she had some bladder trouble but the output was about normal

Comment—Judging from the reaction following the first operation a more extended operation would have been exceedingly hazardous Her health improved after the first operation and the urinary output increased There was but little reaction following the second operation Fear of extending the operation over too long a period of time resulted in overlooking several small stones in the first operation In her present condition if these stones cause any trouble I shall not hesitate to do the regular operation

The essential feature in doing the operation above described is to get the wound long enough and somewhat lower than the usual incision so that the lower pole can be more easily reached

Operating on the kidney without disturbing its location I have found very useful in other conditions notably in tuberculosis In this affection the kidney is not disturbed other than to expose its outer border The kidney is laid open with the cautery and the tubercular area thoroughly destroyed and the wound in the kidney then packed with iodoform gauze In this way advanced cases can be operated on when the regular operation would be out of the question

CLINIC OF DR THOMAS G ORR

BELL MEMORIAL HOSPITAL UNIVERSITY OF KANSAS

A CASE OF LIPOMA MYXOMATODES

This patient has presented himself for amputation for a rather unusual tumor arising in the region of the left popliteal space. He is a coal miner thirty one years of age. He entered this hospital January 19 1923 complaining of stiffness pain and swelling of the left knee and thigh.

In May 1916 while working in a mine he strained his left leg which prevented work for two weeks. About three weeks after the injury he noticed a small mass posterior to the knee. This was incised by the mine physician on two different occasions but no pus obtained. About eight months after the injury his physician began treatment with Coley's serum which was continued daily for three and a half months causing at times severe chills and febrile reactions and resulting in marked loss of weight.

In July 1917 while the patient was in this hospital I removed a tumor from the left popliteal space which measured $8 \times 10 \times 12$ cm. It was entirely encapsulated and only adherent to the skin at the sites of former incisions and serum injections and to the periosteum of the posterior surface of the lower femur over an area 4×5 cm. Dr R H Major who was Professor of Pathology at that time made a diagnosis of lipoma myxomatodes.

About one year after this mass was removed another reappeared in the same location which when first noticed was the size of the end of the patient's thumb. For four years it grew very little. A year ago the tumor began to enlarge rapidly until now it is larger than the first growth.

Three weeks ago the patient received a lacerated wound of the left leg just above the ankle which really caused his en-

trance to the hospital at this time. He had made up his mind before entering that it would be necessary to amputate above the knee to remove the tumor.

Examination at this time shows a mass involving the left popliteal space and surrounding region. It is apparently composed of three or four parts, the largest of which is 10×12 cm in diameter. A broad scar covers the tumor. The consistency is rather soft and elastic. Two or more of the masses are adherent to the old scar, and the entire growth seems to be deeply attached to the lower end of the femur, although it is fairly freely movable. There is a laceration 8 cm long over the lower

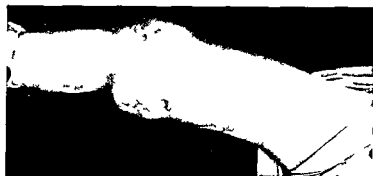


Fig 717—Lat al w ft mo ng f m poplt l p

third of the tibia which does not concern us today. The x ray which is here exhibited shows that there is no evident disease of the bone. In the midst of the tumor mass there is an area about 6 cm in diameter of less density than the surrounding tissue which suggests gas or air in the tissues.

Because of the nature of the tumor and because it has recurred and now involves so much tissue, it is thought best to amputate through the thigh.

We are making long anterior and short posterior skin and deep fascia flaps preparatory to section of the femur in the upper portion of the middle third. The long anterior flap is made to place the scar posterior where it will be least likely to be chafed by the wearing of an artificial limb. The muscles are divided in a circular fashion about 1 or 8 cm below the

point at which the bone is to be severed so that they may be grouped about the bone and not permitted to retract leaving the bone protruding beneath the skin and fascia. The periosteum is ringed around with the knife and removed downward for a short distance with the curet. The bone is sawed through 1 cm. distal to the point of removal of the periosteum leaving the bone end free of covering after the aperiosteal method of Bunge. We draw the nerves down carefully push the tissues upward from around them and inject with 95 per cent alcohol



Fig. 716.—Lateral view of tumor with soft parts dissected away

just above the point where they are to be severed. The alcohol injection method has been advocated by Huber and Lewis as the best means of preventing the formation of tender neuromata. All bleeding points are carefully ligated. To group this large mass of thigh muscles about the bone we pass a purse string suture of heavy chromic gut about their ends and draw them together. This is usual does not entirely complete the job so additional sutures are placed to better group the muscle ends about the bone. Whenever possible the strong intermuscular

fascia is used for suturing. You can now see that a muscle flap has not been made but all of the thigh muscles have been grouped and puckered about the bone end. It is hoped that this method will give the muscles a new insertion to the end of the bone to prevent its protrusion and increase the function of the thigh. The deep fascia has been included in the skin flaps. This is sutured in a few places with chromic gut and the skin closed with interrupted silkworm gut. A small rubber tube drain is placed near each end of the incision between stitches. Drains placed between stitches cause less puckering of the wound after healing than drains at the wound angles. A firm dressing not too voluminous is applied.

A report on the pathologist's findings will be made at a later clinic.

Discussion—In 1857 Virchow first described tumors containing both fat and myxomatous material. He called them myxoma lipomatodes. Following this others described similar tumors under such terms as gelatinous and myxosarcoma lipoma gelatinosum or mucous tissue fat tumors myxolipomatodes and lipomyxoma. In 1865 Virchow reported a tumor of the thigh which he called myxoma lipomatodes majus. Later lipoma myxomatodes telangiectatum and myxolipoma sarcomatosum telangiectodes were terms applied to similar tumors.

Since Virchow's description 51 cases of this type of tumor have been described. These have been collected and tabulated in an excellent article by H. E. Robertson published in 1916 in the Journal of Medical Research. These all conformed in essential respects to the early description of Virchow. The principal characteristics are as follows:

Slow growth (four months to seventy-two years)

Tendency to benignity

Symptoms usually due to pressure or weight

Most common between thirty and sixty years of age

Occasionally sarcomatous

Usually single

May reach great size weighing as much as 50 to 60 pounds

Develop most frequently in intermuscular fascias of lower limbs and in retroperitoneal space

Consistency varies from dense fibrous tissues to soft jelly like masses

Usually globular in form with tendency to encapsulation

The color is grayish white and yellow with brownish and reddish areas

On section lipomatous gelatinous fibrous and at times whitish friable brain like tissue are present

The following is the pathologic report made by Dr H R Wahl

Gross Pathology—On the posterior and outer surface of the knee there is an oval somewhat lobulated mass projecting above the surface of the skin about 4 cm and measuring 11¹/₂ cm in length and 10 cm in width. The circumference of the knee through the patella is 55 cm. At the junction of the middle and upper thirds of this mass and on its posterior surface there is an irregular poorly defined star shaped scar measuring approximately 4 cm in diameter. Beneath the scar the skin is not adherent to the mass which seems to extend forward and upward a considerable distance between the muscles.

On removal of the skin and the muscles the mass is made up of a large number of irregular but well encapsulated lobules measuring from 1 to 9 cm in diameter separated by bands of fibrous tissue. These various lobules seem to penetrate between individual muscle fibers. The tumor is well encapsulated in every place. The entire mass is rather soft, but is firmly attached to the periosteum on the under surface of the distal end of the femur. This lobulated mass measures 29 × 13 × 11 cm. Most of the lobules have a smooth outer surface some are rather pale yellow in color and resemble lipomatous lobules though in some places there are irregular patches of red or dark blue suggesting old hemorrhage. On palpation the lobules are rather soft and boggy in consistency and apparently of a semi fluid nature. On section they cut very readily and the cut surface has in most places a homogeneous appearance. They vary however in different areas. In some they have a translu

cent gray jelly like consistency and in other places they have a rather pale yellow color and resemble a section through butter



Fig 19—Myxomatous tissue

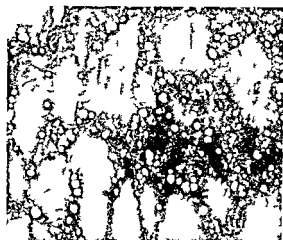


Fig 720—Myxomatous tissue containing embryonic cells and glial cells filled with mucoid material

Some areas resemble a section through the gray matter of the brain others the white matter. Small hemorrhages may be seen throughout the cut surface of the jelly like areas which are

fairly firm and rubbery in consistency the outer surface only presenting a gelatinous appearance. Some of these lobules

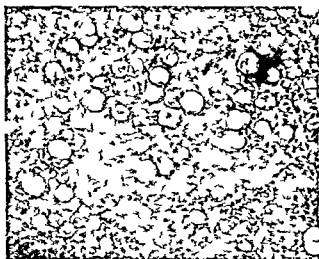


Fig. 721.—Myxomatous tissue containing numerous embryonic fat cells showing a finely vacuolated cytoplasm resembling the so-called foam cells.

have a definite edematous appearance. However, on pressure upon the cut surface, very little fluid can be expressed, and this



Fig. 722.—Myxomatous tissue showing abundant embryonic fat.

has a greasy feel. Poorly defined streaks of small opaque white tissue may be seen extending throughout the gelatinous tissue.

There are some foci of dense fibrous tissue and small areas of cartilaginous tissue

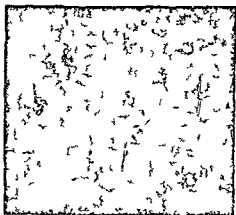


Fig 723—Medullary tissue resembling the proportion of the fatty matter of the bone. It is a mainly fatty medullary

Histologic Pathology—The microscopic picture in various portions of the tumor presents marked variations. Most of

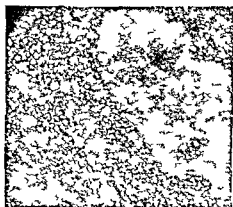


Fig 4—Fatty medullary tissue. The latter is typically formed by the fatty material

the areas that appear like fat in the gross are not normal fat but rather represent masses of incompletely developed fat cells

in which the fat is present in numerous small droplets instead of one large globule. There are all gradations between the fairly mature fat cell and the embryonic type of fat tissue. These various gradations may be seen even in a single section. In many of the foci the cells are made up not of embryonic fat cells but of large pale so called 'foam' cells in which the cytoplasm is composed of numerous very small vacuoles uniform in size and a nucleus often pushed to one side presenting a picture that is typically found in the xanthoma. These xanthomatous areas are very striking. In other foci the tissue has a very peculiar appearance. It suggests under low power neuroglial tissue. However on high power examination the nuclei are found embedded in a fibrillar syncytium in which there are scattered large typical xanthoma cells. This tissue is quite vascular. Hemorrhages are frequently present. Myxomatous tissue is abundant. In other areas there are all gradations from loose fibrillar myxomatous tissue to small foci of cartilage. In some areas there are clusters of large rounded or irregular cells containing brown pigment granules. They are only scattered here and there and do not suggest a neoplastic growth.

In other foci there are large irregular but fairly sharply defined spaces separated from each other by strands of embryonic fat or xanthoma like tissue. These spaces contain a mucoid substance. Some of the spaces are lined by flattened endothelial cells suggesting dilated lymph vessels. In most of these however no living cells could be recognized. The tissue between some of the spaces is frequently quite cellular suggesting a sarcomatous growth. Most of these cells tend to be elongated or spindle shaped. No mitotic figures were found.

The periphery of most of the tumor nodules shows complete encapsulation. There is relatively little inflammatory reaction. There is however considerable hemorrhage present in different sections. Furthermore there are some definite areas of necrosis particularly in the neighborhood of the hemorrhages. A few foci of lymphoid cells may be seen about some of the thin walled blood spaces.

Microchemical Note—Study of various areas by microchemical methods such as polarized light, sudan III and Nile blue sulphate indicates that much of the tissue particularly the lipomatous areas is composed of neutral fat present as single large globules and small fine droplets both within and without the cells. In some areas particularly the medullary and xanthomatous portions where the foam cells are abundant cholesterol compounds evidently predominate. There is no evidence of the presence of fatty acids, lecithin or phosphatids.

Diagnosis—Lipoma myxomatode

APPENDECTOMY WITH LOCAL ANESTHESIA

THIS case is presented as an interval appendectomy to be done with local anesthesia

The patient is a nurse in training who was admitted to this hospital July 22 1921 with a history of six attacks of appendicitis Four years ago she had the first trouble the symptoms of which correspond to a moderately severe acute appendicitis Since then at five different times she has had similar attacks There has been an almost constant tenderness during this time over the cecal region and there is some tenderness today on deep palpation There is no other indication of disease

She has elected to have her appendix removed with local anesthesia during an interval between attacks

The skin is first infiltrated with novocain solution from the level of the umbilicus downward about 8 to 10 cm internal to the semilunar line The skin incision is made and the abdominal wall infiltrated through this incision The subcutaneous tissues are first injected around the entire wound The most important trunks of the sensory nerves lie beneath the deep fascia and the infiltrating needle is thrust through the deep fascia and a small quantity of the solution injected around the wound in a systematic manner Injections are then made in the midline down through the rectus muscle to and into the posterior sheath of the rectus After the lapse of a few moments the rectus fascia is incised and the rectus muscle retracted medially from the gutter between its sheaths after the method of Battle During this process one or more nerves with accompanying artery and vein will be exposed passing beneath the rectus These can usually be retracted up or down to avoid cutting If anesthesia is not complete a few injections may be made along the deep portion of the fascial gutter The peritoneum is then opened for a distance of about 5 to 6 cm lifted with forceps and a circular incision made with a small quantity of the solu

tion from the peritoneal side just beneath the peritoneum. This injection is made to avoid pain that might be produced by traction on the peritoneum about the opening.

The cecum is found and carefully lifted with as little traction as possible. You will notice that it is rolled up with smooth

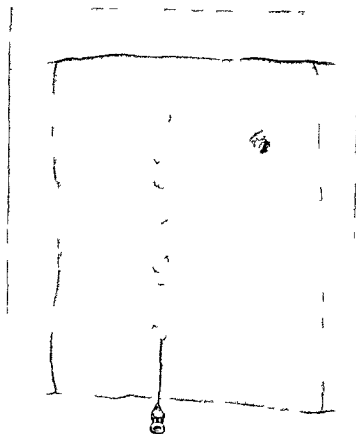


Fig 7 5—Sh w g f l t f t h k f B t t l

forceps rather than really lifted. As soon as the appendix is found it is fixed at the base with a clamp and the meso appendix infiltrated with the anesthetic solution. It is then removed by the ordinary method of ligating the meso appendix and inverting the stump. The patient has complained of some colicky pains

referred to the epigastrium but these have not been severe. Care should be used in making traction on the abdominal wall or viscera. I have had patients complain of pain when a retractor was introduced into the wound the blade of which made pressure

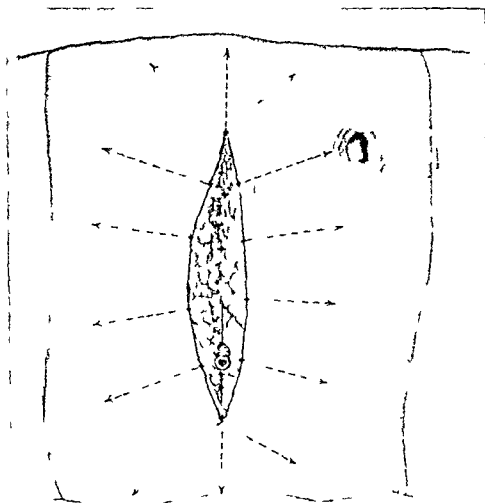


Fig. 126 - Infiltration of the subcutaneous tissues

upon the parietal peritoneum beyond the infiltrated area. This should be carefully watched.

The wound is closed with plain gut in the posterior peritoneo-fascial layer placing serous surface of the peritoneum to serous

surface. The muscle is then replaced in the gutter with three or four interrupted plain gut stitches tied without tension on the muscle tissue. The fascia over the muscle is closed with

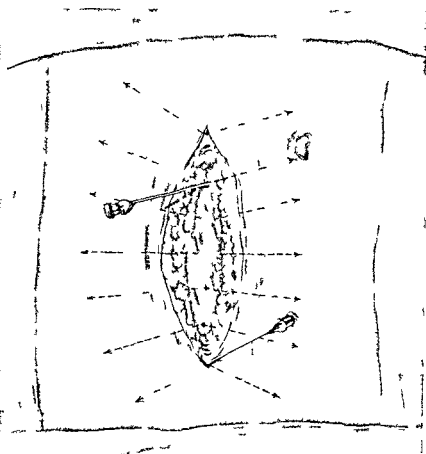


Fig 727—I fil t b th th d p f d th gh th m sle to
p t m

continuous No. 2 chromic gut the superficial fascia with plain gut and the skin with silk.

Discussion—The technic of appendectomy with local anesthesia should be familiar to every surgeon. One frequently finds it indicated. It may be used in a large percentage of

interval appendectomies as a matter of choice either of the patient or surgeon. The simple procedure used today has proved very satisfactory. We have used it very extensively in the case of soldiers who have lung disease either tuberculosis or following gas inhalation in France.

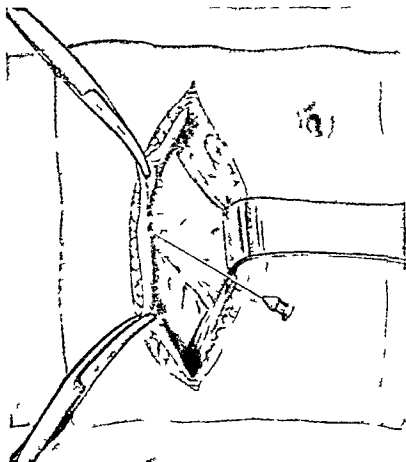


Fig. 128.—Rectus muscle retracted toward midline. Anesthetic is at times necessary along the fascial gutter.

The anesthetic used is 1 per cent novocain with 1 drop of adrenalin solution to 5 c.c. of the novocain solution. This gives complete anesthesia and can be used in comparatively large quantities if necessary. The quantity we use varies from 30 to 50 c.c.

Pain is rarely severe. Some of the patients complain of

colicky pain which radiates to the epigastrium similar to a beginning attack of acute appendicitis. Traction on the gut and its mesentery is avoided as much as possible. As soon as the abdomen is opened the cecum is gently grasped either with gauze

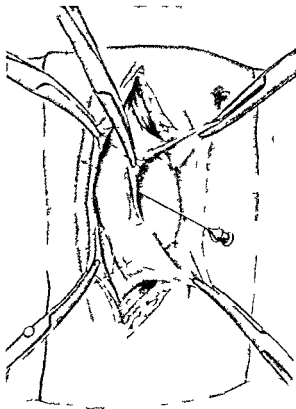


Fig 729—1. Infiltrate the peritoneum distally with small
quantity of fluid in the pelvic folds

or sponge forceps and rolled up rather than pulled up into the wound. This will usually expose the base of the appendix and often the tip. Before ligating the meso-appendix it is carefully infiltrated with the anesthetic. If thought necessary some of

the anesthetic solution may be injected into the parietal attachments of the cecum to block its nerve supply

Traction on the abdominal wall should be reduced to a minimum and all the tissues should be handled with extreme care

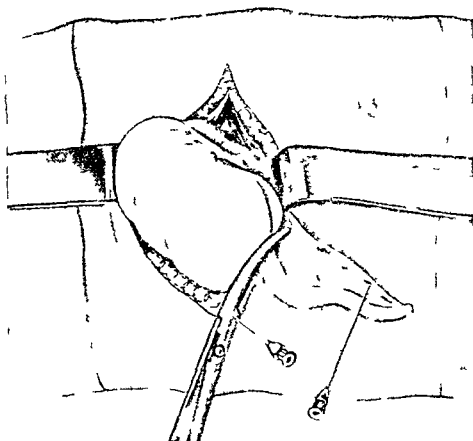


FIG. 730.—Cecum and appendix exposed showing sites for infiltration

Careful hemostasis is important after the use of adrenalin. Wounds such as these appear to heal just as well and as promptly as those done under general anesthesia.

Patients are almost universally pleased after the operation. Nausea, vomiting, abdominal distention, gas-pains, and thirst are reduced. The patient is usually very comfortable the day following operation.

ELEPHANTIASIS NOSTRAS OF THE GENITALIA REPORT OF A CASE AND AN OPERATIVE TECHNIC

THE case for presentation today had an amputation of the scrotum three weeks ago for elephantiasis. The history is as follows. The patient, a mulatto thirty one years of age, was admitted to the Bell Memorial Hospital April 12, 1921, complaining of difficulty of urination, loss of sexual function, and swelling of the scrotum and penis.

About fourteen years ago he had gonorrhea and double bubo. Thirteen years ago he began to have symptoms of a stricture and was treated with sounds.

He dates the onset of this trouble from an injury received to the scrotum by a machine gun tripod while in France in 1917. At that time the injury was not severe and he did not discontinue work. Two months later he noticed that the scrotum began to enlarge. This has steadily increased in size up to the present time. Four years ago he noticed that the old stricture was again closing. One year previous to admission to the hospital he developed an abscess in the perineum which opened and discharged foul smelling pus. Since that time he has passed some urine through this opening. There is at present a loss of sexual function, the weight and size of the penis forbidding erection.

The examination on admission showed that his general physical condition was good except that he appeared slightly anemic. There was a marked enlargement of both the scrotum and penis. The pores of the skin covering the scrotum stood out prominently and there was some irregularity in the skin surface. There were three open fistulae on the posterior surface of the mass. On palpation the scrotal tissue was firm and had a brawny feel. The distal portion of the penis also showed this brawny swelling but at its base the skin and subcutaneous tissues were softer and more or less resembled ordinary edema. The scrotum measured 28 inches at its greatest circumference. When

the patient was standing the lower portion of the scrotum and penis measured respectively 12 and 11 inches below the symphy



F g 731 —Eleph t f p d t m

sis The greatest circumference of the penis was 7 inches The testicles could not be felt On each side of the scrotum just be



F g 732 —El ph tia f t m— w

low the pubes were areas which fluctuated suggesting fluid In each inguinal region there was a definite scar of the former bubos

The Wassermann was 2 plus. The urine was negative except for a few pus-cells. The hemoglobin was 60 per cent. Examination for filaria at night was negative. Operation was advised and accepted.

On May 5, 1921, under ether anesthesia the scrotum was amputated. A tourniquet of rubber tubing was placed about the base of the scrotum and held in place by safety pins through the tube and skin. Three urinary fistulæ were encountered in the mass, all leading to the region of the bulbous urethra. Both testicles were found in normal position in each side of the upper

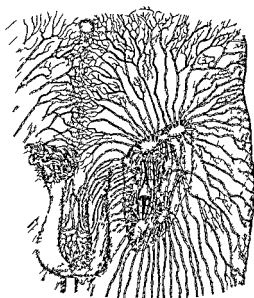


Fig. 733 — Appearance four weeks after second operation.

scrotum and were normal in size. They were pushed upward from the wound and the tunica was not opened. When the incision was made through the skin of the scrotum there was an abundant flow of lymph. All the diseased tissues could not be removed, but a great portion of the mass, with the exception of that about the base of the penis and perineum, was amputated. No operation was done on the penis. The wound was closed with rubber tube drainage. A light infection in one end of the wound occurred but cleared up very promptly. In three weeks the wound was entirely healed except a sinus at the site of the drainage tube. Dr. H. K. Wahl examined the tissue removed, which

weighed 4600 grams. His pathologic diagnosis was elephantiasis of the scrotum with chronic sinuses.

Three weeks have passed since the scrotum was amputated. During this time we have endeavored to work out an application in this case for the Kondoleon principle of an anastomosis between the deep and superficial lymphatics. It is evident that the glans and body of the penis, testicles and cords are not involved in the process. In studying the anatomy of this region



F 734—Gl. d. d. lymph. v. l. f. th. g. l. g. n. Sh. w. pe.
fi. l. lymph. t. f. t. m. d. p. d. g. t. gl. d. (Aft. S. ppe.)

I find that these structures are drained entirely by the deep lymphatics and that here apparently the superficial lymphatics only are involved. With this in mind an operation was planned by which the testicles and cords are to be transplanted beneath the skin and superficial fascia with the hope that such a procedure will promote drainage of the lymphatics of the penis and the remaining base of the scrotum.

We shall make an incision as for the ordinary inguinal hernia. The external oblique is divided to a point external to the internal

ring and the cord lifted. To strengthen the abdominal wall the internal oblique is sutured to Poupart's ligament as in the ordinary hernia operation. The testicle is drawn up into the incision. The tunica vaginalis is opened, turned inside out, and sutured behind the cord and upper epididymis. This is then replaced with the testicle against the subcutaneous tissues of the upper scrotum. A stitch is placed in the external oblique beneath the cord. The cord and testicle then both lie beneath the

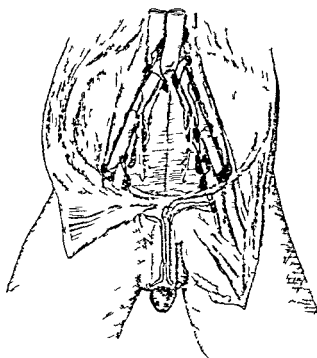


Fig 735.—Lymphatics of glans penis drain into deep glands along the iliac vessels. (After Cunéo and Marcille.)

skin and superficial fascia which is now closed over them. The skin is sutured with continuous silk. You can see that there is some possibility here of an anastomosis between the deep and superficial lymphatics. The deep lymphatics drain the testicles and cord and the superficial lymphatics drain the skin.

On the right side the same procedure is carried out.

It is planned to do a circumcision under a local anesthetic at some future time as soon as the maximum shrinkage of the tissues has taken place.

Discussion—The elephantiasis in this case has evidently been produced by the double bubos stricture and the accompanying inflammation. Filariasis the common etiologic factor in tropical countries is not necessary for the development of this disease. Any obstruction to the lymphatics with resulting

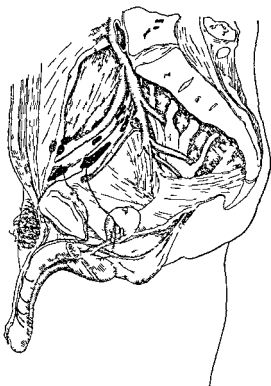


Fig 736—Lymph t d p l d m mb p rt f th th
d t d ep l gl d (Aft C d M ll)

ymph edema and inflammation may be the cause. It is more common in the males of the negro race.

It may affect the leg, arm, genitalia, breast, lip, face, or scalp. It is most common in the leg; examples of which are not uncommon.

The pathology is characterized by a chronic inflammatory fibromatosis or hypertrophy of the hypodermal or dermal con-

nective tissues There is a brawny induration of the skin On section there appears a lymphangiectasis, hemangiectasis, hyperplasia of the connective tissue and chronic edema When the tissue is cut there is usually an abundant flow of lymph Bleeding may also be profuse due to dilatation of the veins

The treatment up to the present time for this condition has been amputation of the scrotum and if necessary a plastic operation upon the penis

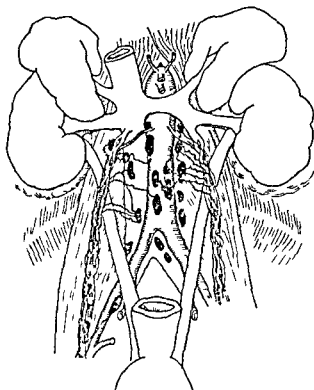


Fig 737—The lymphatics of the testicle epididymis and visceral layer of the tunica vaginalis pass along the spermatic cord and drain into the glands of the lumbar region (After Lorient Cunéo and Delamere)

Summary—This seems to be very definitely a case of sporadic elephantiasis of the scrotum and penis due to infection of the inguinal glands and peri urethral infection following stricture

The treatment of these cases is always surgical This has been abundantly proved in the past

The operative technic first used in this case was to remove as much of the diseased tissue as possible The second opera-

tion was designed to drain the diseased area and prevent recurrence by removing the barrier between the superficial and deep lymphatics. This method was suggested to me by the Kondoleon operation for elephantiasis of the arm and leg which is founded

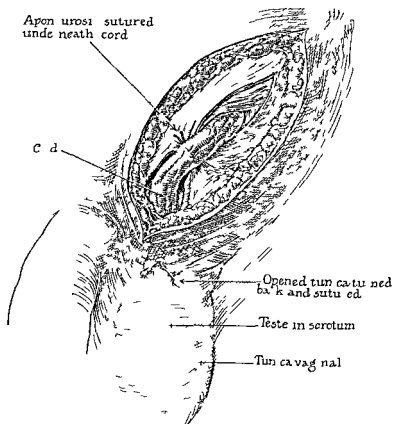


Fig 738—Sketch showing the cord and the testis placed in the scrotum. The tunica vaginal has been opened and the cord is placed in it.

upon the principle of an anastomosis between the superficial and deep lymphatics thus draining the former and reducing the lymph obstruction.

I offer this operative technic as a suggestion only because it has been used in but this one case as far as I am able to learn.

Judging from the results reported from the Kondoleon operation benefit from this method may be reasonably expected

Later Notes—The wounds of the second operation healed *per primam*. After the first operation there appeared to be some diminution in the size of the penis at its base. This was very definitely true four weeks after the second operation. At this time all of the tissues had sufficiently softened to feel the location of the glans above the prepuce. The corpora could be definitely outlined. The patient notified me that erections were now possible which were not possible before.

In August 1922 more than a year after the operation the patient was seen and examined. His condition had so far improved that he did not care to return for further surgery. There was still some enlargement of the skin and subcutaneous tissues of the penis which was more marked after standing during the day. The foreskin could be retracted from the glans with ease. He was at that time in possession of full sexual power and function and considered circumcision unnecessary.

CLINIC OF DRS W J FRICK AND
R D IRLAND

RESEARCH HOSPITAL

VON RECKLINGHAUSEN'S DISEASE

THIS is a startling case (Fig 739) It fastens itself on one's attention at a glance Before it came to us neither of us had



Fig 39—Von Recklinghausen's disease

seen anything like it The patient a woman fifty nine years old single has a strong strain of Indian ancestry a small lender

uneducated but intelligent. Feels well but is annoyed by the growing mass at the base of her neck. There is no pain and the mass is not tender. It has been growing rapidly for the last month or two and is beginning to prevent lateral flexion of the neck toward the left. There is no respiratory difficulty or cardiac disturbance. Digestion and appetite are good. The nodules in the skin have been increasing in number not so much in size for many years. There have been no menstrual disorders. An uneventful menopause occurred ten years ago. There has been no illness except measles and whooping cough early in life.

Physical Examination—Heart negative. Lungs negative to percussion, auscultation and palpation but the r. r. v. shows them both studded with shot like nodules which throw dense shadows. The skin over the entire body and the extremities shows numerous patches of brownish discoloration over rounded cutaneous or subcutaneous tumors which feel like fibrous tissue, are freely movable and which vary in size from that of a grain of wheat to that of a flattened marble. There is no regularity of distribution of the tumors. At the left side of the base of the neck there is a hard tumor the size of an ostrich egg which seems mobile enough to permit of its removal. From this mass long folds of what feels like fibrous tissue covered with coarse pigmented skin fall in festoons, the longest of which reach below the waist line.

Comment During Operation—The incision for the removal of the mass is rather more awkward than difficult to make. It must be carried through the skin and subcutaneous tissue to the large mobile mass which we hope will peel out easily. Unfortunately it does not peel out easily and in digging it out we have torn through what looks like a capsule and the tissue of which the tumor is composed looks like sarcoma. We now attend carefully to hemostasis and close the wound with interrupted sutures of fine catgut. For purposes of examination we shall now excise several of the skin nodules from the thigh closing wounds with catgut sutures.

N t —M p xam t f th t mo d h w that th
k t m p ndl ll c ma Th k t m h w th g b t
fib t

This patient must be given a ray treatment to supplement this operation for it is not conceivable that we have removed all the tumor which is undoubtedly malignant in character

In reading the literature on this case we find that the condition while uncommon is not rare and is variously spoken of as multiple neurofibromatosis multiple neuroma elephantiasis nervorum and fibroma molluscum Adrian in 1903 collected 407 cases and Preiser and Davenport in 1918 state that the disease occurs once in 2000 cases Von Recklinghausen noted the frequent association of multiple neuromas with cutaneous fibromas and in his paper published in 1882 he clearly defined the relationship between various manifestations of the disease which has since quite properly borne his name

Concerning the pathology of the tumors the thing which seems most definitely established is that they grow from the nerve connective tissue epineurium endoneurium or perineurium Osler says that they grow from the sheath of Schwann Trimble is inclined to believe that the tumors are properly classified with the teratomata In his report of a ventral tumor of the sacrum he has this to say Very early in embryonal life the primitive gut and the neural canal are continuous at about the caudal end of the notochord through the medium of the neurenteric canal On one side of this canal and continuous with it are the entodermal cells from which are developed the foregut kidneys ureter bladder etc and on the other side are the ectodermal cells from which are developed the spinal cord brain and nerves Directly associated with these two groups of cells is a third group the mesodermal cells from which are developed the muscles bones blood vessels and connective tissues From the three group of cells differentiated only by individual potentialities are rapidly outlined the various tissue and organs of the body He believes that these tumors may be cut off from these cell masses about the neurenteric canal and that they may produce any type or combination of types of the body tissues and further that nerve element in the tumors described are not essential to their classification as Von Recklinghausen's disease

Helmholz and Cushing in their article published in the Amer

Jour of Med Sci 1906 vol 137 p 355 report and picture a number of cases all of which have tumors chiefly involving the scalp or face In their own cases they have demonstrated degenerating neurofibrils Others have demonstrated ganglion cells in these tumors In many reported cases including our own only fibrous tissue has been found Besides these tumors of the skin and subcutaneous tissue we find the bones are sometimes affected the condition being known as osteitis fibrosa cystica The tumors usually are benign but a tendency to undergo sarcomatous change as in our own case has been reported We have found in the literature no observation of nodules in the lungs though fibrous tumors in the walls of the intestine and stomach have been reported in one case in which an autopsy was done We are inclined to consider them as tumors similar to the skin nodules though it is possible they are metastatic sarcomata The nodules rarely occur on the soles or palms but Anderson in the Jour Amer Med Assoc 1920 vol 14 p 1018 pictures a case with tumors on the left sole Pigmentation of the skin over the tumors is common Cystic fatty and myxomatous degeneration was reported by Von Recklinghausen

Concerning the etiology little is definitely known The French and Italians have tried to connect it with endocrine dysfunction but one should be wary of pitfalls along this route The few things we do know are First that the disease always dates from early childhood Feindel says it is always congenital sometimes hereditary often familial Second that it is about equally frequent among males and females Third that the familial tendency is marked Fourth that it is uncommon in negroes Preiser and Davenport in their paper referred to before (Amer Jour Med Sci 1918 vol 156 p 507) present in an excellent fashion the familial occurrence of many cases The influence of toxins and traumatism in determining the tumors is noted by many Typhoid fever diphtheria pneumonia arsenical poisoning lead poisoning puberty and pregnancy have preceded the appearance of the first tumors or a sudden growth of tumors that have previously existed

The symptomatology of the disease is varied Almost any

sort of psychic nervous or trophic disorders general depression, neurasthenia muscular contraction pain which may be intense and radiate along the distribution of the nerve trunks involved scoliosis or sexual impotence may be present

Later Notes on This Case — The tumor on the neck recurred and was again removed March 28 1922 The wound was left wide open so as to give the x ray a better chance at penetration May 18th she returned with another recurrence larger than the last The patient became progressively weaker and died June 30 1922 No autopsy was permitted The accompanying picture (Fig 739) imperfectly shows the gross appearance of the tumor

GASTRIC AND INTESTINAL BLEEDING IN CHRONIC APPENDIX AND GALL BLADDER DISEASE

In this case we have a manifestation that is uncommon though not rare. Bleeding in the gastro intestinal tract as an accompaniment of disease of the appendix and the gall bladder has been reported many times in the literature of America England France Austria Germany and Italy. The total number of reported cases however is small enough as to make any new case worthy of note.

This patient referred to us by Dr Milne was first seen by us three days ago after a very thorough analysis of her case by Dr Milne. She complains of pain and tenderness in her right abdomen and gives the following clear history. Her mother and certain others of her family have had liver trouble with jaundice. Her own illnesses aside from her present trouble include scarlet fever at ten years a severe case of flu followed by pneumonia three years ago frequent attacks of tonsillitis until two years ago when tonsils were removed. Her menstrual history is uninteresting. She has had 7 pregnancies 4 of which miscarried at about two months reasons not known. Otherwise the obstetric history is negative except for erysipelas following the birth of her second child.

The story of her present illness goes back thirty six years when she was ten years old and when she had an attack of scarlet fever after which she was never so strong as she had been. She definitely remembers an attack of epigastric pain with nausea and vomiting when she was fifteen years old. From that time until now she has had a great deal of digestive trouble—pain nausea and vomiting. At eighteen years of age there was a profuse gastric hemorrhage following one of these attacks. The same thing occurred when she was twenty years old. Between attacks there were occasional black shining stools. The next hemorrhage occurred when she was thirty two years old. At thirty six she had the most severe bleeding of her experience and one year ago

when he was forty five the last marked bleeding from the stomach occurred In every instance the vomiting of blood was preceded or accompanied by epigastric pain and nausea The pain would sometimes radiate into the right hypochondrium the right back and scapular region and several times there has been noticeable jaundice With the exception of the bleeding this is the ordinary story of associated chronic disease of the appendix and gall bladder

The examination reveals a woman forty six years old fairly well nourished and slightly jaundiced Teeth are in fair condition There is a deviated septum the tonsils have been removed Blood pressure 130/76 Heart is normal in outline and boundaries and there is no murmur or thrill Lungs are normal chest symmetric expansion good The nervous system is negative The abdomen is normal in shape no palpable masses no rigidity There is a marked tenderness in the right hypochondrium and in the right side of the epigastrium also in the right iliac region and at the right lumbar ganglion Urine negative x Ray examination of the gastro intestinal tract reveals no evidence of pathologic change

The significant points in the history and physical findings are (1) That her symptoms of gastro intestinal disease began soon after scarlet fever and that from then on she had frequent attacks of tonsillitis until tonsillectomy two years ago (2) That there have been repeated attacks fairly characteristic of combined appendix and gall bladder disease (3) That the character and the relation of the pain and location of the points of maximum tenderness clearly indicate gall bladder disease Also the tenderness over the right lumbar ganglion is seldom present in the absence of chronic disease of the ileocecal appendix region (4) x Ray examination is negative (5) Repeated blood Wassermann tests are negative

We have based our diagnosis of gall stone and chronic appendix disease on these positive and negative data Just what is the cause of the gastro intestinal bleeding we do not know and we prefer not to speculate on it until having inspected the stomach and duodenum

Comment During Operation—We shall use a straight right midrectus incision for the reason that it gives an excellent opportunity to examine all the organs of the upper abdomen also through it one is nearly always able to inspect the appendix. In this case we are compelled to lengthen the incision downward in order properly to expose the appendix field. You will see that there is a developmental band reflected from the ileum around the front of the proximal third of the appendix passing on to the outer layer of the meso appendix. This anatomic anomaly is sufficient to cause what is commonly though improperly called chronic appendicitis. There are no other evidences of appendix disease except that the structure is longer and thicker than usual. We shall divide this band and then remove the appendix invaginating the stump of it by means of a purse string suture of No. 0 plain catgut. It may seem antiquated to some of you that we still go to the trouble of invaginating an appendix stump but we feel just a little safer after having done it.

Palpation of the gall bladder reveals it somewhat distended and containing a large stone. After packing large sponges about the gall bladder to protect the adjacent peritoneum from contamination with bile an opening is made large enough to permit removal of one large mulberry stone. There are no others. We shall suture a rubber tube to the margin of the wound in the gall bladder and make no effort to invert its edges. The tube acting as a foreign body will have the effect of reversing the lymph stream in the gall bladder wall and so tend to wash out any infectious elements that might otherwise remain there. We believe that a failure to grasp the probability of this effect of the gall bladder drainage has induced many operators needlessly to sacrifice many gall bladders.

We now desire to inspect the stomach duodenum and intestine for evidence that may explain why the patient has bled so much and so often. The stomach is absolutely normal in every way it is not enlarged its wall are not thickened there are no visible scars in it and there is not the slightest suggestion of varicosities anywhere. The duodenum is dilated but there is no evidence of kinking or twisting. Its wall are normal in

color and thickness and there is no evidence of scars in the region near the pylorus or elsewhere

We shall close the abdominal wall wound in layers without any drainage material other than the tube sutured in the gall bladder wound. The skin surrounding the wound is anointed thickly with zinc oxid ointment to protect it from the irritating effect of the drainage bile.

Now how is the bleeding in this case to be explained in the absence of varices or ulcers? Woolsey asserts that 2 per cent of appendicitis cases and about 5 per cent of gall bladder infections give a history of gastric bleeding. In our experience this estimate is much too high. There are a great many cases of appendix disease in which practically all the symptoms are referred to the upper abdomen but by no means have we seen gastric hemorrhage in 2 per cent of the cases.

Floersheim states that gastric hemorrhage as an accompaniment of appendix and gall bladder disease seldom shows any pathologic change in the stomach. Kuernwell notes intestinal bleeding as a rare symptom of chronic appendix disease and asserts that it is usually due to an embolic duodenal ulcer. Judd has called attention to the frequency of associated gall bladder disease in cases in which the symptomatology indicated only bleeding duodenal ulcer. He specifically mentions one case in which there is no evidence of the source of the bleeding and suggests that it is due to the presence of toxins in the blood and that it is to be considered as being analogous to essential hematuria or bleeding from an unbroken nasal mucosa.

We are inclined to agree with this theory of toxemia as the cause of bleeding in such cases as the one before us and we regard it as extremely significant from an etiologic viewpoint that this patient's history of trouble definitely began with scarlet fever and that repeated attacks of tonsillitis have maintained a more or less intimate time relationship with her gastro intestinal attacks.

CLINIC OF DR HARRY R WAHL

BELL MEMORIAL HOSPITAL

TUBERCULOUS SALPINGITIS

Case I—A colored woman aged twenty six came into the hospital two weeks ago complaining of sharp shooting pains in the left side beginning three weeks before. The onset of the illness was associated with headaches fever and chills. The abdomen became swollen and tender. The patient was compelled to remain in bed for two weeks but during the week before her admission she was so much improved that she was able to get up and attend to some of her household duties. She has been married three years but has never been pregnant. There was marked leukorrhea. On physical examination the patient was well nourished and apparently in good health. However her abdomen was distended and tender especially over the liver. Vaginal examination showed a tender mass on each side of the cervix. At operation the peritoneal cavity was filled with clear serous fluid and the serous surfaces studded with tubercles throughout the abdominal cavity. The tubes were much enlarged on both sides appeared inflamed were covered with tubercles and were excised. The postoperative course was complicated by annoying gas pains flatus and elevation of the temperature up to 103 F. The temperature however gradually returned to normal and the patient was discharged two weeks after the operation apparently well.

This is one of the tubes that was removed. It is considerably enlarged measuring 3 cm in diameter. Its surface is inflamed and covered with tubercles. There are also some patches of fibrin some of which extend over the surface of the adjacent ovary otherwise the ovary appears normal. In a cross section

through this tube you will note that the wall is markedly thickened. The normal epithelial folds are obliterated and the lumen practically occluded by a pale yellow soft friable encephaloid tissue showing small caseous foci. The fimbriated end of the tube is open yet no tubercles are seen along the end and margin of the tube. The tubercles are more abundant near the middle portion of the tube.

This is a microscopic section through the tube and it shows typical miliary tubercles containing giant cells in both the folds of the mucosa and in the serosa. Few tubercles could be seen in

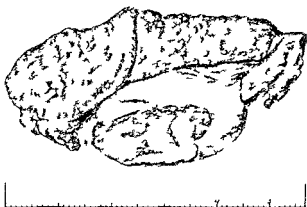


Fig 740—Tuberculous Salpingitis

the muscle layer. This suggests that the tubal condition is probably a direct extension from the peritoneal process which is primary. A large percentage of tuberculous salpingitis, some hold that most of them become infected from the peritoneum. Such an infection may spread to the tubal mucosa through the fimbriated end or through the lymphatics of the peritoneum. Other authors hold that the tubercle bacilli are swept in or aspirated into the tube just as the ova from the ovary are carried into the tube by currents produced by the movement of the tubal cilia and its muscle layer. The mucosa of the tube is very susceptible to the growth of tubercle bacilli and an extensive endosalpingitis

results early and soon overshadows the perisalpingitis. While tuberculous salpingitis frequently follows tuberculous peritonitis the latter rarely follows the former except locally about the fimbriated end of the tube.

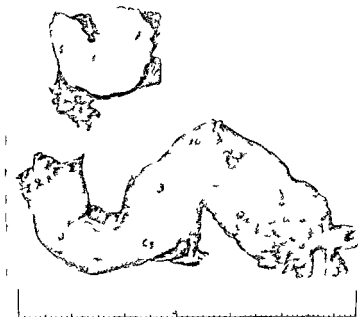
One interesting feature of this case is the apparently healthy appearance of the patient in spite of the extensive lesions in the peritoneal cavity and the comparatively uneventful recovery following the salpingectomy.

Case II — Also a colored woman aged thirty one with a constant dull aching pain in the lower abdomen and back beginning five months ago. This patient was married one year ago but has never been pregnant. She has leukorrhea and painful micturition. The physical examination showed a poorly nourished negress who had some tenderness in the lower abdomen and a palpable tender mass in the posterior fornix of the vagina. At operation both tubes were found enlarged the right tube being twice as large as the left. Attached to the enlarged thickened left tube there was a large rounded cyst of the ovary. There were no tubercles on the peritoneum generally as in the preceding case. The postoperative course was prolonged and stormy and a fistula persisted through the abdominal wound. Three months later a second operation was performed a pelvic abscess found and drained through the vagina. There was rapid improvement following this operation and the patient was discharged several weeks later apparently entirely well.

The tubes in this case appear quite different from those in the first one. The right tube is matted down with the ovary into a flat oval mass measuring 8 by 7 by 5 cm. The tube is thickened and spreads over the ovarian cyst which has a thin wall with clear watery contents. This cyst measures 3 cm in diameter. Over its surface especially near the fimbriated end of the tube there are a few small nodules suggesting tubercles. These could easily be overlooked in the operating room. The inner wall of the cyst is smooth. The tube is rather roughened on the outer surface it shows some adhesions but shows no very definite tubercles except about the fimbriated end where there

are nodules suggestive of tubercles. The fimbriated end is closed. The lumen of the tube contains a considerable amount of thick yellowish green pus. The wall of the tube is markedly thickened and its inner surface is rough, ragged, granular and caseous with a pale yellowish color. The other tube presents a similar picture.

The microscopic examination of both tubes shows numerous miliary and caseous tubercles particularly abundant in the



F 741—Tube from Case II. Also shown is a section through the distal end.

mucosa. Occasional ones may be found in the serosa, very few if any in the muscularis. Giant cells are numerous. The epithelial folds are swollen and there is considerable irregular proliferation of the epithelium.

It will be noted that in this case there was a large cyst of the ovary. A cystic change in the ovary is frequently reported in the association with tuberculous salpingitis. Whether there

is a definite etiologic relation between these two is however doubtful. It is not often that tuberculosis of the ovary follows tuberculosis of the tube. It is also worth noting that the salpingitis in this case is bilateral. This is true in most all cases of tuberculosis of the tube. Usually the right side is affected more markedly than the left. The tubercles are frequently easily overlooked so that the condition often comes to the pathologist without a diagnosis being made. This was the case in this particular instance the micro-copic examination first giving a defi-



Fig. 4.—Tuberculo-endosalpingitis.—Low power magnification of mucosa of tube of Case II

nite clue of a tuberculous process. It is at times impossible to distinguish macro-copically between a tuberculous and a non-specific pro-salpinx. The finding of tubercles explains the prolonged postoperative course in this case for such complications are much more frequent with tuberculosis than other infections of the tubes.

Case III.—White woman, aged forty-one complained of attacks of pain in the stomach. The first attack was noticed two years ago the second one year ago and the last one began

one week ago beginning just before the menstrual period. These attacks were severe lasting one to two hours and were associated with nau ea and vomiting. The pain was most marked over the appendix and radiated into the back and pelvis. A tender lower abdomen was felt and tender masses on each side of the cervix. The patient has been married fourteen years but has never been pregnant. One sister died of tuberculosis. At operation the uterus was found to be retroflexed and held down by adhesions. Both tubes were thickened and inflamed and the left ovary was cystic and matted down behind the uterus. The tubes were twice the normal size and were excised.

These tubes taken from this case at first sight did not look as if they were tuberculous. Their surfaces are rough and on careful inspection occasional small tubercles may be recognized particularly about the fimbriated end. There are many hemorrhagic adhesions. There is little pus in the lumen. The fimbriated ends of both tubes appear normal and are open. The wall of the tube becomes thickened about 1 cm. from the fimbriated end. As in other cases the epithelial folds are obliterated and the inner surface shows caseous nodules some of which extend well into the middle layer of the wall of the tube.

The microscopic examination shows many typical miliary and caseous tubercles throughout the wall of the tube. They are also abundant in the muscularis in fact some of the largest and apparently oldest lesions are in the muscularis. According to some authors Kafka in particular the involvement of the muscularis is significant of the mode of infection. When the organisms reach the tube by way of the blood stream the muscularis is the first to be involved whereas if the infection is derived from the peritoneum the mucosa is more the primary seat of the lesion.

Another evidence of a hematogenous infection is the fact that the fimbriated end shows so little involvement with the tubercular reaction most marked in the middle part of the tube. Such a hematogenous infection implies the presence of a tubercular focus elsewhere in the body which delivered the bacilli into the blood stream. These bacilli finding the tubal tissue a suitable

medium for their growth settled there and began the lesion described. No such primary lesion was discovered in the patient but a negative clinical finding is not conclusive. Such primary foci may be bronchial gland or pulmonary lesions too small to be detected or they may have regressed while the secondary growth in the tubes continued to develop. There has been much controversy on the frequency of the hematogenous mode of infection of the tubes but the weight of opinion tends to ascribe to it a most important role.

This patient made an uneventful recovery after the operation. As in Case II, tuberculosis was not suspected until the microscopic report was obtained. It is worth noting that while the symptoms were more severe and acute the tubes were not as abnormal or as markedly pathologic as in the preceding cases.

Case IV.—This patient, a colored woman aged twenty-eight, first entered the hospital one year ago following an attack of abdominal cramps that began suddenly three weeks before. The attack was associated with fever, vomiting, general weakness, diarrhea and distention of the abdomen. It was so severe for the first two weeks that she had to remain in bed. She was much better the last week before entering the hospital and was able to get up and do some of her housework. She is married but has never been pregnant. On physical examination, some rales were heard over the chest and an indefinite mass was felt in the lower abdomen. Vaginal examination showed a marked tenderness of the pelvic organs. There was slight anemia and a white blood count of 11,500. The preoperative diagnosis was a partial intestinal obstruction and a loughing fibroid.

Laparotomy showed a large fibroid in the pelvis bound down by inflammatory adhesions. The small intestines were distended. On separating some of the pelvic adhesions, abscesses were broken into. The patient's condition became very weak, a vaginal drain was placed and the abdominal wound hastily closed. After the operation the patient had marked elevation of temperature and appeared very ill for several days. A profuse purulent discharge passed out through the vaginal drain.

followed by gradual improvement. One month after operation she was discharged still feeling tender in the pelvis but otherwise much better.

Two months later the patient returned with pain in the right lower quadrant and with an uncomfortable sense of weight in the



Fig 743 -T be f m Ca IV

pelvis. Each morning there were abdominal cramps and pains with a feeling of weakness and a tendency to faint on standing. The menses were scanty. At the second physical examination she seemed well nourished though she looked ill. Her laparotomy wound had healed up completely. There was marked

tenderness in both inguinal regions particularly on the right side. In the latter region there was some rigidity and a mass about the size of a grape fruit. Vaginal examination showed in definite tender masses in both fornices adherent to the uterus.

The second laparotomy showed a large fibroid protruding from the pelvis and adherent to the intestines in two locations. At the site of each of these adhesions there were small abscesses containing thick, pale yellow pus. The fibroid was attached to the uterus by a small pedicle and was removed. Both tubes



Fig. 44.—Diffuse tuberculous reaction in mucosa of tube of Case IV

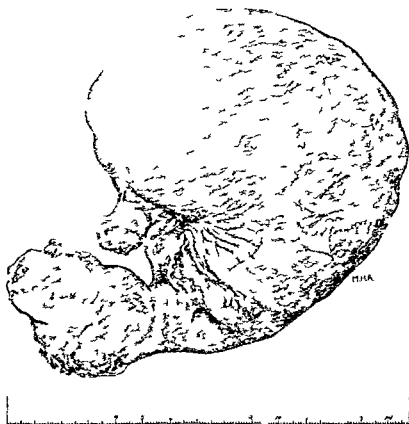
were enlarged, thickened and contained considerable thick greenish yellow pus. The appendix was thickened and attached to the inflammatory pelvic mass. It was removed along with the uterus and the tubes. For several weeks after the operation the temperature remained elevated, often as high as 103°F , but it gradually returned to normal. One month after the operation the patient was discharged apparently well. Recently five months after the last operation she wrote saying that she felt fine and had gained 40 pounds in weight since she left the hospital.

These are the tubes removed from this case. They do not look nearly as bad as was expected from the severe clinical disturbances caused by them. There was no general tuberculous peritonitis. In both you note that the fimbriated ends are open and the walls are thickened. On both there are adhesions on the outer surface but no definite tubercles. The lumen contains a small amount of yellowish pus but is partly obliterated by soft friable tissue showing a grayish white mottling and suggesting granulomatous tissue. The epithelial folds are obliterated. Small caseous foci appear in the inner wall.

The microscopic examination shows many typical miliary and caseous tubercles. In addition there is considerable diffuse epithelioid reaction in the stroma of the mucosa with scattered giant cells throughout the tissue between the epithelial masses. Occasional miliary tubercles are also present in the muscularis. *There is also a very marked irregular proliferation of the epithelial cells of the folds of the mucosa giving a wild typical epithelial architecture yet the individual cells do not appear invasive.* As in the preceding cases the lesions are not as marked as was expected from the clinical symptoms and tuberculosis was not expected until the microscopic examination was made. The prolonged postoperative course was explained by the tuberculous nature of the process.

Case V—This is a colored woman aged forty who came into the hospital complaining of a tumor in the abdomen which she said was first noticed four years ago. There has been some abdominal pain since then along with difficult and painful micturition. There is marked nycturia. The abdomen has markedly enlarged. Patient has lost 15 pound in weight in the past year. Her menses have been regular but scanty up to the last time since which time they have ceased entirely. Patient has been married but has never been pregnant. One sister died of tuberculosis. On physical examination we found a poorly nourished colored woman whose tonsils were unusually large and a purulent exudate could be seen in the crypts. Palpation of the abdomen showed a tumor mass in the pelvis extending to the

umbilicus. It felt hard and smooth and larger on the left side. It did not feel nodular. On vaginal examination the mucosa of the vagina seemed to protrude into the entrance forming a soft mass. Just beneath the symphysis there was an elongated mass that felt indented and seemed to run into the main tumor mass. The cervix could not be felt. The red blood cell count was



F 745 —Right tube from Case V. Note small sclerotic ovary in the angle of the tubal mass.

4 000 000 and the white count 7400. The Wassermann test was negative.

At operation a pelvic tumor mass about the size of a coconut was found adherent to the peritoneum, intestine, bladder, and lower anterior abdominal wall. This was a large, opaque, tough, fluctuating tumor mass arising apparently in the region of the

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ish yellow pus. Its inner wall is very rough ragged and friable and seems to contain some encephaloid cellular tissue other places caseous like tissue. In the bend of this tube there is a small thin walled cyst somewhat pear shaped containing clear watery fluid. It measures 3 cm. in diameter and 4 cm. in length.



FIG. 746.—Left tube from Case V. Shows thin walled cyst with tubercles on its surface.

It is attached to the outer surface of the angle of the tube. On the inner surface of this cyst there are many small scattered grayish nodules somewhat suggesting tubercle. These are the only structure in the entire material taken from this patient which suggest the tubercular nature of the lesions.

On microscopic examination typical tubercles are found in



Fg 747—Large cystic mass with flag py salp n Ca
V N t ca t t n d a d t becl t with gua t c ll at th
th d



Fg 748—Ad mato ct Ca V

almost all parts of the tubes. In the wall of the large cystic mass there are flattened caseous areas. In the proximal end there

are scattered multinucleated giant cells and masses of epithelioid cells with tuberculous lesions being poorly circumscribed. In the larger tube there is also a rather striking change present in the friable tissue noted in the constricted portion of the large specimen. In this region there is a very atypical epithelial hyperplasia appearing invasive in character and presenting a wild epithelial architecture somewhat resembling a papillary carcinoma. The cells however show no mitotic figures. They do not vary much in size and tend to show regressive changes. For this reason in spite of their apparent invasion into the sur-



Fig. 719.—Miliary tubercle in the adenomatous area of Case V

rounding fibrous tissue a diagnosis of malignancy was not made. Even in the stroma of this wildly growing epithelial type of tissue there is tuberculous granulation tissue. The sections of the smaller tube show more typical tuberculous endosalpingitis. Some typical miliary tubercles were seen in the muscle layer but most of them were in the mucosa. Here also there is a very marked adenomatous formation.

The presence of a myoma in this case as in the preceding case illustrates the fact that frequently myomata are combined with tuberculous salpingitis. There is no direct relation between them.

The striking points of interest in this case are the enormous size of the tubes giving a huge tuberculous pyosalpinx second the absence of macroscopic evidences of tuberculosis and finally a pseudocarcinomatous reaction in the epithelium. This might be looked upon as a carcinomatous change in a tuberculous salpingitis. Such changes are reported but their relation to the tuberculous process is not so clear especially in this instance. Adenomatous growth associated with tuberculosis of the tubes are common but true carcinoma is very rare. A number of authors have discussed the relation of carcinoma of the tube to tuberculous salpingitis and an etiologic relationship is apparently accepted by some though not as common as the occurrence of simple adenomatous formations. The prognosis in this case is good as is borne out by the fact that this patient was operated on almost two years ago and is apparently well today. While carcinoma may occur in connection with the tuberculous salpingitis it is not very probable that the carcinoma is the direct result of the tuberculous process. The association is probably accidental.

Case VI—This is a colored girl aged fifteen who complained of a hard lump in her stomach first noticed in the lower right abdomen three weeks ago. There has been no pain though some tenderness on deep pressure particularly on the right side. Nine months ago the patient had a similar mass but in the upper left abdomen. She did not feel sick and said that she did not want to go to the hospital but rather would go on in school. In the past three years this patient has had corneal ulcers and phlyctenular conjunctivitis for which she had received tuberculin treatments. Her periods were normal and began four years ago. Physical examination showed a colored girl apparently healthy though her right pupil was more irregular and larger than the left one. The left apex of the lung showed increased breath sounds. A mass about the size of a grape fruit in the lower abdomen extended to the umbilicus. On vaginal examination there was a mass pushing the fundus of the uterus to the left. The white cell count was 10 000 the red count 4 400 000. An x ray of the

chest showed deposits in the hilum with nodes along the bronchi suggesting a tubercular process

At operation the peritoneal surfaces appeared normal In the lower abdomen there was a tumor mass about the size of a large grape fruit attached by a narrow pedicle to the left tube It was covered with many adhesions On the right side there was a large pyosalpinx about the size of a lemon Arising from

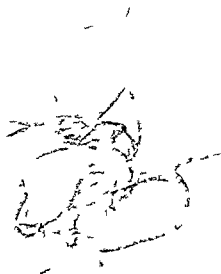


Fig 750—Tube with attached cysts from Case VI The tubercles are only on the inner surface of the cysts

the left tube there was a large cystic tumor made up of a thin serous wall containing clear serous fluid This thin walled sac measured 10 cm in diameter The inner surface of this sac was studded with small warty nodules suggesting papillary growths or tubercles There were many smaller thin walled serous cysts also arising from the same tube This tube was enlarged distorted and looked like a large pyosalpinx The ovaries were

both enlarged and cystic. Some of the pelvic peritoneum had tubercles suggesting a tuberculous peritonitis.

This is the material removed in the operating room. Note the cystic nature of the mass. At first it is difficult to determine the relationship of these cysts. First you notice a large oval cyst 12 by 8 cm attached by a narrow pedicle to this markedly thickened tube. It has a bluish discoloration. It feels boggy. Its wall is thick and on opening you see the reddish brown friable spongy contents which represent masses of fibrin and

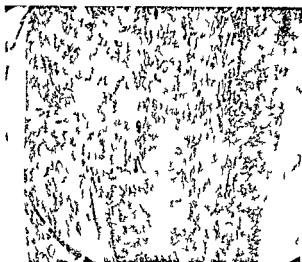


Fig 751—Sect th o gh th w ll f th l ge oval cy t sh w n Fig 750
(Ca VI)

remnants of a blood clot. The inner portion of the cyst is mostly semifluid in consistency and somewhat chocolate in color. Here and there the wall showed small flattened nodules. Microscopically a few flattened caseous foci were in the wall otherwise it was composed of hyaline fibrous tissue.

Then you also note another large thin walled cyst attached to the surface of the middle portion of the tube measuring 12 cm in length and 8 cm in diameter. It contains a watery fluid. Its inner surface is covered with many rather scattered large warty elevations. A third cyst arising from the same location

measures 6 cm in diameter. Its surface is covered with hemorrhagic adhesions. It has a thick wall and is filled with a jelly like substance resembling lemon custard. Several small thin walled cysts were present and apparently arise from the outer surface of the tube. Many of these cysts showed tubercles on the inner surface. Finally also note the tortuous and thick wall of the tube itself. It is considerably elongated. It is distended in its distal part the fimbriated end is occluded and has a pyriform enlargement measuring 3¹ cm in diameter. The tube is

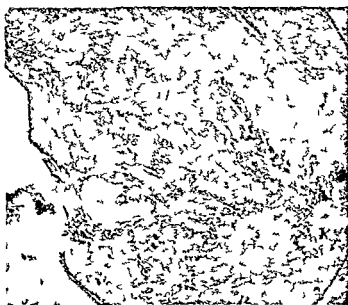


Fig 752 —Miliary tubercles in mucosa of tube of Case VI

linked upon itself twice in its course and it is from the surface at the angles of the curves that the cysts arise. Ovarian tissue was not definitely seen in this region. The other tube is also enlarged and shows a pyosalpinx with the fimbriated end entirely occluded bulbous in shape and bent over toward the proximal end. In this bend there is a small oval cystic ovary. The lumen of this tube is filled with thick yellow pus and is lined by a ragged grayish white granulation tissue which appears thick and friable in places. The epithelial folds are entirely obliterated. Neither tube showed tubercles upon their surface. Both tubes show the

same picture on the inner surface both of them containing a considerable amount of pus

Microscopically large caseous tubercles were numerous. The warty masses in the wall of the cyst were composed of fibroid and caseous tubercles. Fibrous tissue particularly predominates. In the wall of the tube itself the change was mainly in the mucosa and in some places a few miliary tubercles were present. The reaction is mostly more diffuse. There seems to be considerable tissue reaction and a rather fibroid character to many of the



Fig 753—Ad mat ct t b f C \ I

tubercles. In addition there was a very marked irregular epithelial proliferation causing adenomatous formations similar to the preceding case but not as advanced or as irregular. The walls of the thin walled cyst show nothing but fibrous tissue and no epithelial lining.

One of the striking points about this particular case is the presence of such marked cystic lesions associated with such mild clinical symptoms. A second point is the peculiar cystic formation arising from the infected tubes. In the third place the early age at which this infection occurred is unusual. The tuberculous

infection occurring commonly much later in life. The cystic formation is to be regarded as secondary to an inflammatory process on the peritoneal surface the cysts representing nothing but subperitoneal cysts and not lined by any epithelial structure. One of these cysts however containing more gelatinous like material is probably of a different origin and may have been derived from the ovary.

Case VII—This is a young colored woman aged twenty one who came in the hospital with a complaint that she had a growing pain across the lower abdomen. This began three months ago with a severe frontal headache and a profuse thick yellowish vaginal discharge associated with burning on micturition. Three weeks later she became so weak and the backache became so severe that the patient had to go to bed. The backache seemed to radiate up between the shoulders. Two weeks after this there developed a sharp pain alternating with a dull throbbing sensation in the left lower abdomen. During the past three weeks the patient has had an uncomfortable sensation in the lower abdomen and also a pushing down sensation with each inspiration. She describes the pain as if it would tear her open. She lost 30 pounds in weight. Menstruation began at sixteen and was regular up to one year ago since which time it has been irregular. There was some dysmenorrhea. Following childbirth there is a history of puerperal infection. The patient had been in poor health three months after the birth of the child. One sister of the patient died with tuberculosis. Physical examination showed a poorly nourished anemic appearing colored woman with a generalized tenderness throughout the abdomen particularly marked in the lower abdomen and on the left side. Vaginal examination showed marked tenderness on each side of the vaginal fornix with retroflexion of the uterus. There was considerable induration in the broad ligaments on each side. Clinical diagnosis was a bilateral salpingitis with a retroflexed uterus. Blood count was about 4 000 000 red and 8000 white blood cells. The temperature went up to 101° F. before the operation but after the operation went up a little bit higher for

several days While in the hospital the patient complained some what of night sweats

At operation numerous adhesions were found in the region of the pelvis Many of these adhesions appear hemorrhagic Both tubes were markedly enlarged The uterus was retroflexed with considerable attachment of the intestines through this region On breaking down some of the adhesions a considerable amount of pus oozed out from one of the tubes The tubes and uterus were removed with some difficulty Apparently one of the tubes formed a wall of a pelvic abscess Culture made from this pus showed a Gram negative bacillus and also some cocci There were no tubercles over the peritoneum generally

This is the specimen which was removed at operation You will notice the uterus is rather small The tubes are flattened out but very much enlarged markedly inflamed and covered with numerous hemorrhagic adhesions On one side the tube is so ragged and irregular that it suggests a part of the wall of a pelvic abscess About the edges of this ragged inflamed tubal tissue there is a considerable amount of fibrin The fimbriated ends are open Over the surface of the tubes particularly near the fimbriated end the tissue is roughened and there are small translucent grayish nodules somewhat suggestive of tubercles The lumen of the tube contains a moderate amount of pus The epithelial folds are in places obliterated The wall of the tube is markedly thickened and apparently shows some small caseous nodules throughout its substance The uterus is small Histologic examination shows many typical tubercles in the mucosa of the tube There were many diffuse poorly defined tubercles There was also much tuberculous granulation tissue containing many typical giant cells The reaction appeared to be much more acute and diffuse than the other cases Some areas suggest an acute pyogenic infection superimposed on the specific lesions

This patient shows a much more acute type of tuberculous reaction corresponding with a more severe and acute clinical picture The finding of other organisms with pus suggests the presence of a pyogenic infection superimposed on the tuberculous process You will also see in this case a definite tuberculous

involvement of the endometrium of the uterus. This is a rather common sequel of a tuberculous salpingitis. It is rare to have a primary uterine process with extension up the tube and even questioned by some authors.

Case VIII—This was a young colored woman aged twenty three who came into the hospital complaining of pain in the right lower quadrant beginning six weeks ago. At first she was able to be up but could not attend to her housework. After four weeks she had to go to bed. There has been considerable headache. The pain is often sharp and throbbing in type at other times it had a more dull aching character and radiated to the lumbosacral region. There was some vomiting nausea fever and occasional night sweats. Patient has been married. She has had an acute leukorrheal discharge beginning one year ago. She has had one child aged six years. The menses have been irregular and entirely absent in the last five months. Physical examination showed a tender abdomen somewhat more marked in the left lower quadrant than on the right. Bimanual examination showed a tender mass situated in the midline between the symphysis pubis and the umbilicus. Inguinal glands were enlarged. There were some casts and albumin in the urine.

At operation the omentum was found firmly adherent to the tubes. There were marked adhesions about both tubes and the uterus the tubes being considerably thickened and indurated. The uterus was also enlarged. The tubes were enlarged and contained pus.

Following the operation the patient complained of considerable abdominal pain. There was considerable elevation of the temperature at times running up as high as 101° F. and marked epigastric discomfort and tenderness. Three weeks after the operation the patient was discharged but returned the following day complaining of marked pain in the epigastrium. Physical examination showed nothing to account for this pain which seemed to be more severe in the pit of the stomach and did not involve the pelvic region. In spite of continuous treatment there was no improvement and the patient was again discharged.

During her second admission temperature was elevated to 101° F on several occasions. The specimens were taken out at the operating room and do not show very marked changes. However you will notice that the tubes are enlarged, indurated and the wall contains encephaloid tissue. The lumen contains some caseous material and the folds are obliterated. A section through the wall shows a considerable number of irregular yellowish areas suggesting caseation or softening. On opening the uterus which is also enlarged the mucosa seemed to be roughened and friable and more granular than is usual. No definite tubercles however could be seen on the surface of the tube.

Histologic examination through the uterus showed considerable disintegration of the endometrium and here and there a few small scattered tubercles showing typical giant cells. Several areas of caseation necrosis were found. Tubercles could be seen scattered throughout the muscle layer of the uterus. In the wall of the tube typical caseous and miliary tubercles were present but the more striking change was the extensive caseation which involved the interior of the tube. In fact most of the lumen of the tube is lined by caseous granulation tissue behind which a few smaller caseous tubercles could be seen. Some of these tubercles also extended into the muscularis and occasional ones were found in the serosa.

This particular case shows nothing very unusual or worthy of special mention. The fimbriated end however in this case was wide open. The tubes grossly did not look very abnormal yet microscopically very marked changes were found and a rather extensive active tuberculosis present. Another feature worth mentioning is the fact that the entire uterine wall was infiltrated with tubercles as well as the endometrium. The severe clinical symptoms which this patient had could be explained to a certain extent by the extensive active tuberculosis present in the organs. Another point worthy of notice is that here we have tubes and an which grossly did not strongly suggest tuberculosis.

Case IX—This was a colored woman aged twenty-eight who came into the hospital complaining of amenorrhea not having

had no periods for one year. Occasionally she has had pain in the back and along the left side. The abdomen has become enlarged in the last ten months. She has shown an increase of weight of 40 pounds in the past year. She has never been pregnant though she has been married several years. Puberty began at sixteen. The menses have always been scanty. On physical examination the abdomen was found to be very large and an indefinite mass could be palpated in both flanks. On the right side there was some tenderness on deep pressure particularly in the lower quadrant. Apparently there was also some fluctuation. The legs were large and edematous. Vaginal examination showed retroflexion of the uterus and a rather large soft mass over the fundus. At operation the uterus was found to be infantile. The tubes were enlarged, infected and bound down with adhesions. There was a small abscess in the right cornua of the uterus which measured about 1½ cm. in diameter. On opening this abscess it seemed to be lined by yellowish granulation tissue and contained yellowish thick pus. Following the operation there was an elevation of temperature to 101° F. on the fourth day, otherwise the postoperative course was uneventful and the patient apparently made a complete recovery.

These tubes appear to show very little change. They are thicker than usual but about the same size. The outer surface is covered with few adhesions. The lumen does not show anything very marked except near the proximal end which is very much thickened and contains an abscess as noted at operation. One of the tubes shows several hard nodules 3 to 4 mm. in diameter. On section through these indurated nodular portions we find that the center is made up of considerable caseous-like material suggesting an old abscess. Microscopic examination through these nodules shows them to contain caseous material surrounded by epithelioid tissue within which typical multinucleated giant cells are found. In the surrounding tissue there is considerable fibrous tissue and also some irregular calcified foci or deposits. Only a few definite tubercle bacilli were present in most places there being considerable fibrosis.

This is evidently a case of tuberculous salpingitis in which

the lesion is partly healed. Its location so close to the uterus while the rest of the tube shows no tuberculous change suggests possibly this may represent extension of a uterine tuberculosis up into the tube. This is not likely, however. The uterus was not removed.

Case X—This is also a colored woman aged twenty seven whose main complaint was pain and a constant ache in both lower quadrants but particularly marked on the right side. It began two months ago with marked leukorrhea and an irritating vaginal discharge. There has been some vomiting and also some chills and fever. Symptoms seemed to be worse during menstruation. The patient is married and has one child living and well. In the last six or seven months the periods have been very irregular.

On physical examination the abdomen was found to be very tender in the lower portion and a tender mass could be felt above the symphysis. Vaginal examination showed a hard tender mass near the fundus of the uterus and another mass in the culdesac. At operation numerous pelvic adhesions were present about the uterus and the tubes. Both the right tube and ovary were involved in a large pelvic abscess. This also involved a portion of the intestines. The left tube and ovary were also bound down in adhesions including a cyst which was ruptured in attempting to remove the tube and uterus.

The postoperative course was uneventful though there was some vomiting following the operation and a moderate amount of pain in the right side. There was also some drainage from the incision. On the ninth or tenth day after the operation there was an elevation of temperature to 100 to 101° F. but this gradually returned to normal. For several days the patient complained of dizziness and drowsiness. Three weeks after the operation the patient was discharged apparently well.

This mass of material covered with adhesions consists of the uterus and two enlarged tubes. The uterus itself is also enlarged and covered with adhesions. Its wall is thickened. You will notice as we open the lumen that the mucosa is different than is

usual. Instead of having a smooth velvety appearance it has a yellowish gray roughened granular appearance. It seems to be definitely indurated. Apparently there are also some small translucent grayish nodules which somewhat suggest tubercles along its surface. Both tubes are considerably thickened and enlarged. The wall is markedly thickened. The lumen of the tube is not very markedly distended, particularly the smaller tube in which the lumen is filled by an encephaloid type of tissue. The other and larger tube shows obliteration of its distal end. The wall of this tube is thickened and in the lumen there is a small amount of yellowish caseous material. This tube is flattened out over a large ovarian cyst.

Microscopic examination shows many typical tubercles in the uterus. In the tube the most striking change is marked by hyperplasia and overgrowth of the epithelial structures and epithelial folds in many places somewhat suggesting an adenomatous papilliferous type of growth. The stroma of these epithelial folds is abundant and shows a tendency to be replaced by masses of epithelioid like cells. In some places there is a tendency to caseation. In other places there are large accumulations of pus cells. No very definite typical circumscribed tubercles could be seen. However the epithelioid reaction, the marked hyperplastic reaction and the caseation associated with definite tubercles that are present in the uterus form the basis for a probable diagnosis of tuberculous salpingitis.

Tuberculous salpingitis is a frequent pathologic lesion in the tubes. Up to Hegar's monograph in 1886 it was regarded as a rare condition and even up to 1909 it was so uncommon that individual reports of cases were frequent in the literature. Greenberg found that nearly 1 per cent of all gynecologic cases had tuberculosis of the tubes and that of every 13 abnormal tubes removed 1 was tuberculous. Statistics regarding the frequency of tuberculous salpingitis vary a great deal. This is in part due to the fact that microscopic examination is not always made and without a microscopic examination diagnosis is often impossible. Williams showed that 75 per cent of his cases of tuberculous salpingitis were not recognized by macroscopic

examination. Several authors have recently emphasized the same necessity of a microscopic examination before tuberculous salpingitis can be excluded. There is no question but what a low grade non specific inflammation is impossible to distinguish from a tuberculous salpingitis. Out of 216 pathologic tubes removed in this clinic in the past four years 11 were found to be definitely tuberculous and only 3 of these were definitely recognized at operation. Out of the 11 cases only 1 was suspected clinically.

Tuberculosis is much more frequent among the colored women than white women. In our series all but 2 of the cases were in colored women. Tuberculous salpingitis occurs during the period of greatest sexual activity of the woman that is especially between the ages of twenty and forty. However we had one patient who had the disease at the age of fifteen. Occasionally tuberculous salpingitis does occur in young girls. The frequency of tuberculous salpingitis with active sexual life may bear some direct relation with the alternate congestion and anemia of the tube occurring with each period. Congenital maldevelopment of the internal genitalia seems to predispose to tubal tuberculosis. Merletti found 28 cases of tuberculosis of the uterus out of 80 cases of hypoplasia. A family history of tuberculosis is present in a large proportion of the cases. Greenfield reports 22 per cent with a positive family history. Three out of our 11 cases also showed a history of either brother or sister having died of tuberculosis. A large number of the cases in fact most of our cases (that is 6 out of the 11) gave a history of sterility. This frequency of sterility is noted by other authors. Whether sterility is due to the tuberculosis or a sterile condition predisposes to tuberculosis is a question that we are not prepared to answer. It is improbable however that there is a definite connection between the two. The onset of the disease is said to be associated in a large number of cases with some phase of uterine activity such as an abortion, childbirth or the onset of menstruation.

The relation of tuberculous salpingitis to tuberculosis in other portions of the body is a question that has excited a great deal of discussion without any very definite conclusion. Antecedent

history of tuberculosis such as an old pulmonary lesion, pleurisy or bronchitis is often present. In only 1 of our cases (No. 6) was there a definite antecedent history, the patient having been treated for phlyctenular conjunctivitis. An x-ray was made from the lungs of this patient and evidence of tubercular involvement of the lungs were found. In none of the other cases was evidence of tuberculosis in other portions of the body found. The two points which have aroused a great deal of controversy are first whether tuberculosis in the tube is primary or not. It is generally held that while primary tuberculosis may occur it is extremely uncommon. The other question, the relation to tuberculosis of the peritoneum, brings up a very much disputed question as to the mode of infection of the tube. It was thought at one time that most of the tuberculous infections of the tube were due to an ascending infection extending up from the lower genital tract, a theory supported by Cohnheim. The weight of opinion at the present time is that while such an ascending infection may occur it is extremely uncommon. The two most common modes of infection are either by way of the blood stream or by an extension from a process situated in the peritoneum. It is probable that the latter is more frequent than the former but here again there is a great deal of difference of opinion among different authors. In the hematogenous mode of infection the course implies that there is a primary focus somewhere else in the body from which tubercle bacilli have escaped into the general blood stream. The objection to this theory is that in many cases of tuberculous salpingitis no definite primary focus can be found; however, it is well to bear in mind the fact that failure to demonstrate a primary focus does not exclude the existence of such a focus, inasmuch as it may be too small to produce physical signs while again it may have disappeared by the time the secondary process in the tube has developed to the stage where it has resulted in operative interference and its recognition.

There is no question but what a tuberculous salpingitis may lead to an infection of the peritoneum. On the other hand it is much more likely that infection occurs more frequently in the other direction, that is from the peritoneum to the tubes. Wei

gert has shown that when large numbers are introduced into the peritoneal cavity a general tuberculous peritonitis occurs and when small numbers of bacteria appear in the peritoneum they produce a localized peritonitis about the pelvic peritoneum. It has also been shown that foreign particles which are introduced into the peritoneal cavity tend to gravitate into the recto uterine pouch and from this they may be aspirated up into the tubes. This aspiration is brought about by the action of the cilia and the muscular movement of the tube in the same way as the ova are drawn into the tube. It is held by many that this is the means by which tubercle bacilli escaping into the peritoneal cavity may get into the tube without producing a definite peritoneal tuberculosis and these organisms finding in the tubal mucosa a point of lowered resistance developed the lesion in the mucosa or submucosa. The only method by which constant success in experimental tuberculous salpingitis is obtained is the injection of tuberculous material directly into the tube of the guinea pig. Other methods have always given inconsistent and inconstant results.

Tuberculous salpingitis is usually bilateral being present in both tubes in all of our cases though it may be unilateral. It usually occurs more frequently on the right side than on the left. Furthermore the tubes are more frequently the seat of tuberculosis than any other portion of the female genitalia the uterus and then the ovary being involved in this order of frequency. The ovary as just noted is more rarely involved however it does occur occasionally. The relation of tuberculosis of the tube to that of the ovary in the female bears essentially the same relation as that of the epididymitis in the male to tuberculosis of the testicle. However while in men tuberculosis of the kidney and genito urinary tract is commonly associated with tuberculosis of the genital organs such association is very rare in woman.

In a certain group of cases tuberculous salpingitis resembles nothing but a chronic thickened tube such as any other chronic salpingitis does and cannot be distinguished from a chronic pyogenic infection. In a second group of cases tuberculous salpingitis resembles an ordinary chronic pyosalpinx. The tube

is enlarged. The distal end is occluded. It often has a general sausage shape. The lumen of the tube is filled with thick greenish yellow pus and the inner wall shows a caseous area and cellular friable granulomatous tissue. In fact the inner wall may have an encephaloid appearance. In most cases typical tubercles are not present or if present they are about the fimbriated end only. The fimbriated end may be open though Williams reports closure in 50 per cent of his cases. In the third group of cases the serosa may be covered with numerous tubercles. This type is more frequent in cases where there is a general tuberculous peritonitis with a secondary extension over to the tubes. The most common gross form which is noted in our cases is the pyosalpinx. Occasionally cystic formations may be present and often become very complex. Apparently they arise from a fusion of the various adhesions present over the surfaces of the tube and represent nothing but secondary tuberculous inflammatory reactions such as were noted in Case VI. There is another type of reaction which is quite striking in a number of our cases and is mentioned by a number of other authors and that is the neoplastic type of tuberculous reaction. That is the type in which there is a marked epithelial hyperplasia so marked as to lead to the formation of adenomatous structures protruding into the lumen of the tube. Some of these structures are so irregular and appear so invasive as to suggest a malignant change. In fact some authors speak of these as precancerous lesions however the association between this condition and a cancer has not been definitely established and is probably accidental rather than etiologic.

In all of our cases the diagnosis was based upon specific histologic changes. No stain for tubercle bacilli were made. As a general rule the histologic diagnosis is very simple. Usually there are well circumscribed caseous tubercles especially in the mucosa. There is usually an endosalpingitis perisalpingitis occurring in a certain group of cases. The muscularis is relatively rarely affected. In some cases the reaction is much more diffuse typical giant cells being embedded in an epithelioid transformation of the stroma. In other cases the caseation is much

more prominent while the entire inner surface of the tube may be lined by caseous material supported by tuberculous granulation tissue. Occasionally there is a more chronic type of granulation tissue containing giant cells with a considerable amount of fibrous tissue. Many of the tubercles may be fibrous in type. All of the e forms may be present in a single tube at the same time. Usually one form predominates. The caseous and the miliary types are both common and the mucosa is the main seat of the change. In fact in most cases there is an endosalpingitis pseudofollicularis tuberculosa as it is called by some German authors. Frequently there is a very marked epithelial hyperplasia irregular edematous folds and numerous crevice like spaces lined by epithelial cell. The epithelial cells are often very irregular the nuclei show numerous atypical forms but the general appearance does not suggest a malignant change. In fact most of the cells tend to show regressive rather than proliferative changes. In some cases the larger and older tubercles are seen primarily in the muscularis suggesting a hematogenous infection. Kafka regards this as a distinguishing point between a hematogenous and peritoneal infection in the latter the involvement being mainly in the mucosa and submucosa in the former in the muscularis.

Certain lesions are quite commonly associated with tuberculous salpingitis and are worthy of mention. Occasionally there is an acute appendicitis especially a periappendical reaction. Adenomyomata are also fairly frequent. In these cases there has been considerable discussion as to whether the glandular growth is secondary to tuberculosis or whether the adenoma was primary and predisposed to a tuberculous infection. The former seems more likely. Again myomata are rather frequently found being noted in 20 per cent of the case in one group of statistics. They are present in 3 of our cases. Cystic ovaries are very commonly reported but it is doubtful whether there is any definite connection between the two. Carcinoma is also reported in the association with tuberculous salpingitis but a true malignant change is probably very rare and when it does occur it is very doubtful if it bears a definite relationship with the tuber

culous salpingitis Tuberculosis itself produces such a markedly atypical adenomatous change that a diagnosis of malignancy should be made with considerable reservation It should be regarded as an inflammatory hyperplasia Pelvic abscesses are also frequently reported in connection with tuberculous salpingitis These abscesses frequently lead to fistula formation and healing is often delayed and troublesome The postoperative results are often relatively stormy and may result in abdominal fistula

The symptoms are often very obscure There is usually abdominal pain and tenderness especially in the lower part but it is not severe In fact it may be absent and only a sensation of weight in the pelvis obtained Some of the patients come in complaining only of a mass in the abdomen some loss of weight and occasionally some elevation of the temperature Occasionally night sweats and chills are complained of As a general rule severe constitutional symptoms do not occur unless there is an associated general peritonitis There is usually a tender palpable mass in the vaginal fornix Amenorrhea is reported in a certain number of cases and other menstrual disturbances are sometimes reported Sterility is frequent in married patients Often there is an obscure abdominal pain for months with pains radiating into the lower back Leukorrheal discharge is usually present Physical examination of the chest and other portions of the body usually fails to reveal a primary focus for the tuberculous lesions

A prognosis after removal of the tubes is good as long as the tuberculous process is limited to the pelvic adnexa but it becomes grave when there is active tuberculosis elsewhere when there is a pre operative elevation of temperature and when there is extensive involvement of the peritoneum

Perhaps the most striking characteristic of tuberculous salpingitis is the absence of distinctive and characteristic clinical symptoms simulating a low grade infection and often showing relatively slight destructive lesions Abundant adhesions are commonly found This lack of striking characteristics accounts for the frequency with which a clinical diagnosis is not made

Only 13 per cent of the cases at Johns Hopkins Hospital were diagnosed clinically according to the recent report of Greenberg. Furthermore the mere gross inspection of the tube fails to reveal the true nature of the disease in most cases. As a general rule where there are markedly active histologic changes and rapidly growing tissue the clinical symptoms are much more severe than in those cases where there is more marked fibrosis histologically at least this is the impression obtained from the study of the cases in our list. It is however rather hazardous to attempt to correlate the severity of clinical symptoms with the extent of histologic or gross anatomic changes in a given case. Occasionally a severe clinical case may show relatively slight changes in the tube though this is not the rule.

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CLINIC OF DR MERVIN T SUDLER

THE BELL MEMORIAL HOSPITAL

PAROTITIS FOLLOWING ACUTE SUPPURATIVE APPENDICITIS

PATIENT is a young woman thirty one years old who was seized with an acute attack of appendicitis thirty six hours before operation Her pulse had risen to 96 the leukocyte count was 20 000 of which 88 per cent were polymorphonuclear forms The temperature was 101 F

Under gas-oxygen anesthesia the abdomen was opened by a transverse McBurney incision The appendix was found adherent and retrocecal The base of the appendix was freed ligated and buried with a Gould stitch In separating the appendix an abscess was opened which contained about 10 c c of pus The portion of the appendix which had not sloughed was removed drainage inserted and the incision closed In thirty six hours the abdominal symptoms were satisfactory but the right parotid region became sore and tender and the patient's temperature rapidly rose to 104.4 F (mouth) 105 F (by rectum) Twelve hours later the left parotid became swollen though the fever never again reached the height of the initial rise

The abdominal condition has healed without complications or unusual symptoms The right parotid returned to normal in eight days The left has remained hard and more or less painful for fourteen days The pain was aggravated while lying down and was partially relieved by a sitting posture The patient also complained of some pain in the ears and for the first week the patient expectorated a sticky purulent material which decreased rapidly and completely disappeared a week before the swelling subsided

The situation was complicated by the existence of mumps in the adjoining residence. The patient states that she had mumps when seven years old. The question of whether the patient is suffering from epidemic parotitis or the form which supervenes in acute abdominal conditions immediately arose. However with the history of having had the epidemic form and the fact that she was an adult suggested the diagnosis of acute parotitis following abdominal inflammation.

The occurrence of parotitis following abdominal conditions of various kinds has been reported quite frequently. It occurs with sufficient frequency and with grave enough symptoms to arouse interest. Dyball has given us the most careful study of this condition which he calls *celiac parotitis*. Blair and Padgett have given in a recent article an analysis of 58 cases. It occurs after injuries to the urinary tract, disease or injury of the alimentary canal, disease or injury of the abdominal wall, peritoneal pelvic cellular tissue, and disease and injury of the generative organs. The time of its appearance varies from twenty-four hours to two or more weeks, and a few cases are reported where it developed much later. Both glands are involved in about 30 per cent. of the cases.

The severity of the symptoms varies from a simple enlargement with moderate pain to gangrene and death in exceptional cases. Dyball had such a case develop on the fourth day following an operation for acute appendicitis. There were no unusual abdominal symptoms. Abscess (practically unknown in mumps) develops in about one-half of the cases.

Four theories have been suggested in explanation of its occurrence:

1. The pyemic
2. Oral sepsis
3. Reflex
4. Toxic

The pyemic theory explains the condition on the basis of blood-borne infection. The theory of oral sepsis explains it on the basis of transmission of bacteria from the mouth up the ducts to the glands, and there giving rise to inflammation. The reflex

theory presupposes some dilation and metabolic changes in the gland due to the irritation of sympathetic nerves in the abdomen. As there are no known facts in normal anatomy or physiology to form a basis of this explanation it will not be referred to again. Dabill suggests as the possible cause certain toxic substances present in the blood which are derived from (a) certain organs modified by injury or disease or (b) microbic origin or (c) deranged digestion and that in cases where abscesses develop a secondary invasion by organisms either directly from the mouth up the ducts or through the blood stream occurred.

In 1916 Rosenow and Dunlap reported an epidemic of appendicitis and parotitis probably due to streptococci contained in dairy products at the Culver Military Academy. There were 54 cases of parotitis and 8 of appendicitis. However apparently the two lesions did not develop in the same individual. From four of the appendices streptococci were cultured which gave rise to parotitis and appendicitis in rabbits in varying proportions showing that these two organs had a very similar affinity for this particular organism. From some samples of butter and cheese organisms having similar specific properties were isolated.

Rosenow's work on the specific action of morphologically similar bacteria has been very ably confirmed by Haden using his own technic on cultures made from freshly extracted teeth. He believes that the slight variation in the oxygen tension of the various organs is the simple explanation of the elective action by the bacteria. In the cases reported by Rosenow there seem to be a marked susceptibility of the appendix and the parotid to the same strain of streptococci. If it is possible to reproduce various definite lesions of joints, eyes, kidneys, heart, stomach, etc. by bacteria obtained from cultures taken from the teeth or tonsils there is no reason why the same result should not be obtained in cases of infection in the abdominal organs and from this it would seem that the preponderance of the evidence is in favor of elective bacterial invasion by organisms carried by the blood stream just as the weight of evidence is in favor of most infections of the appendix being of hematogenous origin.

The symptoms of the patient before you would seem to be in accordance with this explanation though unfortunately there was no immediate bacteriologic examination of the appendix. A section from the appendix stained for bacteria shows large numbers of single cocci, many pairs and occasional chains of six to eight organisms. These stained positively by the Gram method. The pus obtained from the ducts showed a short chain, non-hemolytic streptococcus. Forsee reports a case with an abscess the pus from which gave *Staphylococcus aureus* in pure culture. So apparently the cause is not limited to the streptococci alone.

It is evident if this idea or its cause be correct nothing can be done that will prevent it. Fortunately it is not a common complication. There is a possible chance of secondary or primary mouth infection and under any circumstances of health or disease a clean tongue and teeth are of great importance and under these conditions might serve to decrease the severity of the symptoms.

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CHOLELITHIASIS CHRONIC CHOLECYSTITIS AND CHOLANGITIS

THE patient is a stout woman forty nine years old. She has had 11 children 7 of which are living and well. Her teeth tonsils urine blood heart and blood pressure are negative. Eight months ago she had a supravaginal hysterectomy for fibroids and a large ventral hernia resulted. She entered the hospital primarily to have this repaired. This was operated upon three weeks ago and at the time the gall bladder was palpated in order to obtain accurate information concerning the abdominal symptoms of which she had complained for about fifteen years. The gall bladder was found free from adhesions normal in size and except for the fact that five or six calculi could be palpated nothing abnormal could be felt. The stomach and other organs were negative. This gave us an opportunity to co ordinate the symptoms with the pathology for the three weeks intervening between the operation for the hernia and the operation for the removal of the gall stones.

The symptoms of which she complained are as follows. About fifteen years ago she began to have pain in the upper part of her abdomen sharp sticking in character and these pains came on without any reference to meals. They apparently started in the stomach and then spread to the right side back and chest. They would last from one half to one hour and then disappear. Afterward the right side of the abdomen was quite sore and tender on pressure. Finally any pressure in this region would excite the pain. Active exercise of any kind would cause it also. She was never jaundiced. She was never nauseated unless she drank cold water at her meals which on several occasions made her vomit. Along with this pain in her stomach she had a great deal of gas in the intestines and belching. As far as she knew no fever accompanied the attacks. She has never had typhoid fever.

The abdomen is opened by a Bevan incision the gall bladder and edge of the liver come plainly into view. The condition of the gall bladder is unchanged from the former examination though we now have the opportunity of seeing it as well as feeling it. The calculi can be felt as before. The ducts and head of the pancreas are exposed and examined and found negative. In this patient this is relatively easy to do since there are no adhesions and the exposure is good. Therefore by standing on the left side and palpating with the right hand we can make a very accurate examination. On the other hand where there are adhesions and where the head of the pancreas has been inflamed one can only be sure of the absence of stones by passing a probe into the duodenum and palpating along the probe. The gall bladder is definitely whitish instead of the normal slaty blue color showing that in the past considerable inflammation has been present and that the thickening of the gall bladder has resulted. This change in the translucence of the gall bladder is characteristic of cholecystitis and is caused by the thickening and increase in the connective tissue elements of the outer wall usually leaving the mucosa unchanged. Inasmuch as the mucosa should be the first part involved if the infection came directly from the bile the location of the pathologic changes supports the idea that the large and intimately connected lymphatic vessels of the liver and gall bladder furnish the usual route of infection. The edge of the liver also is rounded and somewhat irregular showing that the inflammation has not been confined to the gall bladder but extended to the liver also. While this condition is usually much more pronounced in calculi of the common duct a careful examination of the liver in most cases of cholecystitis show that a cholangitis has also existed as in this case. Peterman states that this is true in approximately 65 per cent but this is evidently very much too low. At the time of operation it is recognized by the edge of the liver becoming rounded and blunt and often irregular instead of thin and even and evidences of the formation of scar tissue in other portions. The presence of cholangitis also shows itself before operation by the enlargement recognized by Riedel. According to Graham

this begins as a pericholangitis and this in turn leads to the infiltration and increase of connective tissue in the periportal and interlobular spaces. As the gall bladder is badly damaged and the patient in good condition we shall remove it. This was done from above downward. The cystic duct was doubly ligated with chromic catgut then with a piece of plain gut over which a small soft rubber drainage tube was slipped. The flap on each side of the gall bladder were then stitched across and the incision carefully closed using figure of 8 stitches for the peritoneum muscle and fascia. The calculi are the usual type composed largely of cholesterol stained by bile salts but containing no lime salts. As to the cause of the symptoms. The direct cause was undoubtedly the cholecystitis and cholangitis and it would be of great interest to know whether the formation of the gall stones preceded or followed the inflammatory symptoms. Our rather extensive experimental evidence is somewhat contradictory as to the relation between cholecystitis and cholelithiasis. Cholesterol calculi have been produced experimentally by the introduction of massive doses of colon and typhoid bacilli directly into the gall bladder. This is more apt to occur if the wall of the gall bladder is damaged. In other words it is possible experimentally to cause a precipitation of the cholesterol by infection. It is also possible to cause it by the introduction of cells from mucous membrane or foreign bodies and as the bile salts are necessary to hold cholesterol in solution a reduction in the percentage of these or the increase in the percentage of cholesterol might also cause it.

In pregnancy where there is an increase in the cholesterol content of the blood and bile and some stasis naturally accompanying the inaction of this condition it is not difficult to believe that a mild infection of the bile or lack of normal balance between the cholesterol and bile salts would start their formation and that once formed they by their irritation assist in developing the cholecystitis and cholangitis. In this instance our guess would be that formation of the stones preceded any marked infection of the gall bladder or liver but that once started it became a vicious circle and while the symptoms were never acute

or very severe they were sufficient to cause marked pathologic changes. Babcock found that the same general type of infection gave rise to the development of a myocarditis which is frequently serious; this is absent here. We also know that the ultimate elimination of the products of protein destruction by the kidneys are dependent upon the normal function of the liver and one cannot view these changes from cholangitis except as capable of producing serious results.

Gall bladder surgery is serious and dangerous and the gravity and danger is largely due not to the condition of the gall bladder but the damage which has been done to the liver itself; the opportunities of infection from the bile and the increased danger of producing shocks caused by the manipulation of the organs in the upper abdomen. This last of course emphasizes the necessity of gentleness in manipulation. In regard to the anesthetic much greater muscular relaxation can be secured by the use of ether and where the patient is in good condition we always use it. When there is evidence of systemic intoxication, jaundice and failing kidney function then gas oxygen with perhaps a very small amount of ether is chosen. In this patient we are using ether.

In conclusion I should like to emphasize the extreme complexity of the pathology and symptoms of gall bladder disease; the absolute need of careful individual study and in case of operation proper preliminary preparation particularly in the presence of jaundice and the operation itself should be performed as gently and with as little manipulation as possible.

The result of the examination by the pathologist (Dr. Wahl) was as follows: Cholelithiasis, chronic cholecystitis and toxic hepatitis (the last diagnosis was made from the examination of some liver tissue which adhered to the gall bladder when it was removed).

LACTATING INTRACANALICULAR LIPOMYXOFIBRO ADENOMA OF THE BREAST

PATIENT is a negress thirty six years old Two years ago the left breast began to enlarge It decreased slightly after the birth of the child Six months ago she gave birth to another child and lactation has been continuous now for two years The tumor enlarged rapidly and has now reached very large proportions There has been no pain though some itching The increased weight (1700 grams) has caused some discomfort by pulling The skin is not adherent and the axillary nodes are not enlarged She has been in fair health though she has lost a little weight The blood and urinary findings are negative Clinically this is apparently a benign growth However when it is remembered that 80 per cent of all tumors of the breast are malignant and that this percentage increases rapidly as the age of forty is reached we shall take the precaution of having this diagnosis confirmed by a frozen section and microscopic examination

A small portion was then removed and sent to the pathologist (Dr Wahl) who reports that there is no evidence of malignancy Therefore a plastic operation was carried out using a Warren incision and preserving the nipple and leaving a breast almost the same size as the other so the mutilation will be reduced to the minimum An examination of this tumor shows that it is unusual It is very large and when cut across markedly cystic with the cysts filled with milky fluid yet it is very evident that it is not chronic cystic mastitis concerning which Bloodgood has so ably written recently This condition is much more diffuse and often scattered throughout the breast The remainder of this breast and the one on the left side are apparently normal

Gross Pathology (Dr Wahl) —The specimen consists of an unusually enlarged cystic encapsulated tumor mass derived from the breast (Figs 754 755) It weighs 1700 grams and measures 18 to 14 by 10 cm It is fairly well encapsulated and has a lobulated arrangement There is a piece of skin attached to one side

measuring 21 by 14 cm. This skin is loose and is not attached firmly to any part of the underlying tumor tissue. One section of this tumor presents a very complicated and unusual picture made up of larger and smaller cystic spaces many of which show large irregular finger like processes projecting into the lumen. Some of these cysts are as much as 3 to 4 cm. in diameter. Most of them contain a milky secretion. The cross section through this cystic tumor mass shows that it is composed of two main



Fig 754—M l t t g t n a l l p o m y f i b m f t h b t

parts having an inner portion which is fairly well encapsulated and separated from the outer portion. This inner portion measured 10 cm. in diameter and it differs in appearance from the surrounding portion. It is composed largely of fat which has a mottled pale yellow and gray appearance with numerous cystic cavities within it many of these cysts containing the same milky secretion noted above. This mass is entirely surrounded by a gray translucent tissue mottled with pink. It contains

numerous cystic space which in places communicate with one another. The surrounding tissue has a lobulated appearance and numerous cysts suggesting glandular tissue. On the other hand the appearance of the larger internal mass suggests a fatty tumor or a lipomyxoma. The lumina of many of the cysts have irregular papillary processes protruding into them though in general the wall of the cysts are smooth and there are areas of necrosis. The bulk of the tissue surrounding the internal mass is coarsely lobulated and resembles lactating breast tissue.



FIG. —Cross-section of tumor. A indicates the tissue shown in the section.

Histologic Pathology—The architecture is that of a cystic adenomatous growth with numerous papillary processes protruding into the lumen of these cysts forming a structure commonly designated intricinctular adenofibroma of the breast (Fig. 756). There are numerous large irregular cystic spaces lined by one or two layers of cylindric epithelial cells. Outside of this the stroma contains numerous smaller gland acini many of which contain an albuminous secretion suggesting lactation. In other places these solid nests of cells suggest a beginning malignancy.

nancy though in a general way the architecture is nearly normal. The stroma varies. In some places it is fibrous in character; in other places it has undergone a marked hyaline degeneration; and in still other places there is a striking tendency to assume a myxomatous or mucoid type of stroma. The stroma in some places is extremely cellular, containing many spindle-shaped cells. In other places there are very few. Certain areas show a marked inflammatory reaction in which there are numerous polymorphonuclear leukocytes. In many places this tissue is



Fig 756. Section through a mass from Fig 754. Magnified 80 diameters.

extremely vascular and many newly formed widely dilated blood spaces are present. In other areas this vascularity is entirely absent. There are some areas of necrosis. The mucoid areas are extremely striking. In these areas the stroma is made up of reticular fibrous tissue which takes a basic stain rather than an eosin stain. Typical lobules of lactating acini are seen separated from each other by bands of fibrous tissue.

Diagnosis — Massive lactating intracanalicular lipomyxofibroadenoma of the breast. There is a large lipomyxomatous intracanalicular fibroma apparently included by the main tumor mass. No evidence of malignancy.

CLINIC OF DR H J McKENNA

ST MARY'S HOSPITAL

FRACTURE OF PATELLA MOBILE METHOD OF TREATMENT

HERE is a man who entered the hospital January 3d with a fractured patella. He is twenty nine years old and a railroad fireman. While walking across the street he was struck by an automobile and knocked down. On trying to rise he found that his right knee was injured and he could not use it. x Ray showed a comminuted fracture of the patella. This patient was put to bed and a supporting splint applied to the posterior surface of the leg. He was operated on January 10th and you see him now two months afterward walking with a cane and using the right leg with almost as much freedom as he uses the left.

It is not by any means uncommon to read in the literature to hear spoken of in clinics and to see practised the so called operation of 'wiring the patella'. This method of repairing in open operation a fractured patella is as I say quite common. Let me say now that the operation done on this man you see here today was not a wiring operation. The so called wiring of the patella I have never done. My first operation on a fractured patella was done in 1915 and the same operation was done at that time as was done on this man and the same after treatment given.

Most surgeons are skeptical or even hostile when we speak of the after treatment we employ in these cases. Only last week I saw an excellent surgeon wiring a fractured patella and following the operation the leg was put in a plaster cast. This form of after dressing we have never used in a fractured patella. We advise and practice early active and passive movements of the knee joint. I mean actually this specifically this. We begin flexion of the operative joint the day of operation immediately

following the operation the next day and all subsequent days until recovery. We advise, encourage and insist upon voluntary movements of the injured leg. That is, have the patient attempt to flex the leg under its own muscle power. We use no casts, no splints, no supports of any kind following the operation, only the plain gauze dressing surrounded by a bandage. When the external or skin wound is healed, all dressings are removed. Massage and active and passive motion are practised each day a little more vigorously. Don't misunderstand, the leg is not fully flexed from the first day, but only gently massaged and mild flexion, only a fraction of a degree, which day by day is increased, a little more flexion each day.

This man who was operated on January 10th was up in a wheel chair on January 22d and on crutches January 25th. He left the hospital February 1st on crutches, he came back here on March 20th using a cane. As you see, he can walk as well without the cane as with it. The cane he claims he uses only for the sense of security it gives. Flexion here under its own muscle power is to a right angle and extension is complete. When one considers that wiring the patella followed with a plaster cast which is left on for an average of five weeks before even massage is begun, we consider that a far more crippling procedure than the one followed in this case. The operative procedure followed in this case is the one followed by us in all fractured patellæ.

A curved transverse incision is made over the center of the joint down to the site of the fracture. The blood clots which are usually found in these cases are flushed out with a stream of saline. A purse string suture of No. 3 chromic catgut or kangaroo tendon is thrown around the entire patella including all fragments; in this case there were three, it being a comminuted fracture. The purse string suture is drawn taut and tied laterally, pulling all the fragments together. Care is taken that no tissue fragments from the torn capsule are allowed to intervene between the patella fragments. Also care is taken by the aid of forceps that while pulling the purse string suture taut the fragments meet and come into their best apposition. Following the first purse string suture a second one is placed and tied on

the opposite side. Following the purse string sutures beginning laterally and alternating sutures are taken in the capsule and tied bringing the capsule and quadriceps in approximation. a running suture is placed over this along the rent in the capsule

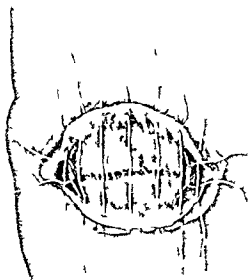


Fig 157

the skin sutured and gauze dressing applied. Mild and gentle manipulation is then begun and practised on all succeeding days. We believe we get quicker and better functional results and less trophic changes in this method of joint immobilization after operation.

Our attention was first called to this so called mobile method of treating fractured patella by Dr E Wyllys Andrews of Chicago in his clinic at Mercy Hospital in 1914 It looked



F g 758

logical to us and we took his word for the results We first practised it in 1915 which as I have remarked above was my first case and have practised it ever since and thus far have no reason to change

COMPOUND FRACTURE OF BONES OF FOREARM WITH GAS BACILLUS INFECTION AS A COMPLICATION

THIS Italian boy aged seven years came into the hospital June 15 1921 giving a history of having fallen and injuring his left forearm. The left forearm showed on examination a compound fracture of both bones just above the wrist. The wound was cleaned with a 5 per cent phenol solution and tincture of iodin and debridement done. There was no separation of tendons. The fractures were reduced and a posterior splint applied with a bandage. Antitetanic serum given. The next morning the hand and arm were swollen and temperature was $102\frac{1}{2}$ F. The intern on seeing this swollen condition thought it due to too tight bandaging so loosened the bandage. In the afternoon of the same day the intern became suspicious of something besides too tight bandaging as the cause for the swelling and peculiar condition of the tissue. Dr. E. L. Miller saw the case and suggested multiple incision along the arm which the intern made. The next morning I saw the patient. He had had the arm immersed in hot boric solution. There was a peculiar odor and to those who have smelt the odor of gas bacillus the condition was readily recognized. The incisions made previously in the arm had not gone through the fascia. The fascia was then incised and the muscles which had a peculiar parchment like feel and crackle bulged out. The hand and lower third of forearm were markedly shriveled. The arm was again immersed in hot boric acid solution. The afternoon of this same date the boy's temperature went to $104\frac{1}{10}$ F. The hand and forearm were more markedly shrunk. The following day (June 18th) the patient was markedly toxic temperature 104.8 F. and pulse 160 or above. It was decided that a guillotine operation as near the shoulder joint as possible was the only procedure left as an attempt to try to save his life. There was crackling in the tissue of axilla and around the shoulder.



The patient was taken to the operating room and under ether anesthesia a guillotine operation done 2 inches below the joint. Three rubber drainage tubes fenestrated several places were run from the point of the shoulder sides and axilla down to the site of amputation. The patient was in the operating room five minutes from start to finish. He was then removed to his bed and irrigation of peroxid of hydrogen begun through tubes. Oxygen was injected into tissue by means of needles attached to rubber tubing connected to oxygen tanks.

Oxygen was injected into the tissues beginning a considerable distance from the shoulder, down about the waist line and over to midline of chest and back gradually working toward shoulder. Injections were given twice daily. Irrigations of peroxid of hydrogen were given every two hours. Patient's temperature the following day went to 102° F and then on the 21st it went to 102.5° F. From that time on both pulse and temperature became normal. This patient was up in a wheel chair on the 22d but peroxid of hydrogen irrigations and the oxygen were kept up. The tubes were removed on the 23d and the irrigations continued through tube sinuses. The oxygen injections were discontinued on the 23d. This patient went on to a recovery. On July 18th skin flaps were dissected up and the bone cut off about an inch up and the flaps brought down over stump.

It was probably a mistake in judgment on our part in waiting as long as we did before doing the guillotine amputation.

EXOPHTHALMIC GOITER WITH ACUTE MYXEDEMA COMPLICATING POSTOPERATIVE CONVALESCENCE

SURGEONS are about the only members of the profession who consider that most forms of goiter require surgical treatment for their permanent relief. We saw most forms of goiter because there is one form or type of goiter the so called colloid or adolescent goiter occurring in girls up to the age of twenty three which surgeons feel is not surgical. Marine and Kimball have really done a monumental work in demonstrating that this type of goiter is subject to cure and prevention by the proper administration of iodine. The prevention of this type of goiter means vastly more than the elimination of cervical deformities. It means in addition the prevention of those forms of physical and mental degeneration such as cretinism mutism and idiocy which are dependent on thyroid insufficiency. Further it is possible that it would have some influence in preventing the development of thyroid adenomas these adenomas for all we know may be due to the same stimulus which causes the colloid enlargement. These adenomas once their growth is initiated are not controlled by iodine. The fact that adenomas possibly develop from fetal rests is another indication that they may be due to the same stimulus as the colloid. We know the simple endemic or colloid goiter most commonly develops during one of three periods namely fetal life around the age of puberty and during pregnancy. So if we have iodine influencing the simple or colloid goiter that may develop during fetal life so also it may influence the adenoma which probably develops at this period and possibly from the same stimulus.

However this case that we are presenting here is not one of these types but the exophthalmic type and from now on we will try to confine our remarks to this type. It is this type that is considered more particularly by surgeons as a strictly surgical disease in that surgery will give the earliest the best and the most permanent results.

The facts upon which the feeling against operative treatment for exophthalmic goiter are based seem to be first the permanence of operative results have been questioned second these cases have been considered notoriously bad risks and third numerous non operative procedures have been exploited. These views have fostered an aversion to operation which has resulted in harm to many patients. With these preliminary remarks we will proceed with the case at hand.

This girl aged twenty two gives a history of having had influenza three times the first time in 1918. She had diphtheria two years ago and tonsillitis many times during childhood. She had quinsy following the diphtheria. Her tonsils are out now. In January 1921 she began to notice shortness of breath and palpitation of the heart which she attributed to her gain in weight. These symptoms became so annoying that she had to leave school. Her home doctor saw her and told her she had a goiter. He put her to bed on a light diet. She remained in bed six weeks during which time she lost in weight from 125 to 110 pounds. Her pulse on going to bed was 140 this gradually came down to 110. After getting out of bed she again gained weight and pulse again crept up to 135. Her shortness of breath came back on her and she noticed considerable weakness on exertion. She still has attacks of palpitation frequent headaches and attacks of melancholy. She is very nervous and very sensitive gets hot quickly and perspires easily and frequently. Her blood pressure is systolic 140 and diastolic 80. Pulse rate 135. Some exophthalmos. The patient says she has always had prominent eyes. She has a marked tremor of hands.

She entered the hospital June 4th. On June 5th her basal rate was plus 3. Her pulse rate 120. She was put on light diet and kept in bed. On June 11th another basal rate was run and it was plus 36. Her pulse was 96. She was operated June 15th under gas oxygen anesthesia. The regular collar incision was made through skin and platysma the fascia split centrally and muscles retracted not cut. The thyroid gland was exposed and brought forward with tenacula. Four fifths of the right lobe and two fifths of the left lobe with isthmus were removed.

Section of thyroid showed hyperplastic goiter with areas of necrosis or degeneration. Patient was returned from the operating room in considerable shock, her pulse was 160. Hypodermoclysis of saline with digalen and morphin were given. Hypodermoclysis was given by the gravity method and was continuous. On June 14th her temperature went to 102.8 F and she was surrounded with ice bags. It then dropped to 100 F. On June 14th proctoclysis of 5 per cent glucose and 3 per cent sodium bicarbonate was begun. She gradually improved.

From the first she was never able to retain anything on her stomach. On June 14th she complained of headache and sleepiness very apathetic pulse very slow, she would fall asleep while the neck was being dressed in sitting position. Skin dry. We took these symptoms to be due possibly to an acute myxedema from a too sudden drop in metabolism. Thyroid extract gr $\frac{1}{2}$ was ordered to be given three times a day. Her sleepiness and apathy after three days began to clear up. From this time on her convalescence was normal and she was up in a wheel chair June 21th. A basal rate was run June 28th and was plus 4. She left the hospital July 3d. Whether or not these symptoms of apathy, sleepiness, headache, etc. were of a truly myxedematous origin we cannot definitely state, but we could find no other cause for them and therefore take this condition to be due to the sudden drop in metabolism. Acute myxedema we are well aware is a rare sequel of thyroidectomy and this is our first experience with such a case.

CLINIC OF DR JOHN G HAYDEN

ST LUKE'S HOSPITAL

THREE CASES OF TRAUMATIC SURGERY

I wish to present for your consideration 3 cases which have proved rather unique in my experience and I hope will be of interest to you

CASE I TRAUMATIC VENTRAL HERNIA WITH INJURY TO MESENTERY

W C B Male Age twenty three Weight 135 pounds
Switchman Admitted to St Luke's Hospital August 8 1921
Discharged August 31 1921

Complaint —Severe pain and tumor of abdomen

History of Trouble —Patient has always enjoyed the best of health working every day August 8 1921 about 11 p m while working between two cars on a curve was caught through abdomen and small of back by deadwood on ends of cars Was pinned between the cars and it was not until the cars were pulled apart that he was able to extricate himself

Was not able to stand after the cars separated because of extreme pain in his abdomen and weakness and he fell to the side of the tracks Taken immediately to St Luke's Hospital where he arrived about 12 30 a m On admission his pulse was 74 temperature 97.6° F He was suffering considerable pain in his abdomen felt cold and on examination a hernia about the size of a navel orange was protruding subcutaneously through the abdominal wall just below the umbilicus The skin covering the tumor mass was excoriated and badly bruised Bowel was demonstrable to palpation in the tumor

Operation —Immediate operation was decided upon and under ethyl chlorid ether anesthesia a transverse incision 5

inches long was made over the swelling. Immediately on cutting through the skin small gut came into view. Both recti were plainly visible the anterior and posterior sheaths having been torn as was also the fascia and peritoneum.

Much to my surprise very little in fact practically no hemorrhage was found. On stripping the small bowel a piece of ileum 6 inches in length from which the mesentery had been torn was found. The bowel itself gave no evidence of injury.

The patient being in good condition a complete operation was decided upon and the bowel from which the mesentery had been torn was excised and a lateral anastomosis made.



Fig 60



Fig 761

Closure of the abdominal wall was made in layers using twenty day chromic gut following the principles of the Mayo operation for umbilical hernia. Rubber tissue drain in subcutaneous tissue.

Immediate postoperative condition was fair. Pulse 110. Respiration 20.

Was placed in Fowler's position given morphin and normal salt solution by Murphy method.

Bowels moved with enema on the second day on the third

day the pulse and temperature reached normal and his recovery following this was without incident other than a very superficial slough of the injured skin. This healed promptly under a screen cage and electric light. Skin sutures out on twelfth day and allowed to get up.

After returning to his home he gradually became more active and he was able to return to his usual occupation in two months from the date of his injury. He has worked steadily since.

On September 6, 1921, he was given a barium meal and an x-ray taken of his intestinal tract. From the film it was impossible to tell where the anastomosis had been made other than what appeared to be a slight hesitation at one point in the progress of the barium shadow.

Result—Cured

Comments—The favorable outcome of this case is attributed largely to the fact that there was practically no bleeding and early operation.

The photograph shown was taken September 15, 1923. He is entirely well. In connection with this case I wish to report another case of traumatic hernia.

CASE II TRAUMATIC HERNIA OVER CREST OF RIGHT ILIUM

A M Male Switchman Age forty Weight 230 pounds
Admitted to St. Luke's Hospital December 6, 1909 Discharged
December 17, 1909 Re-admitted December 28, 1909 Final
discharge January 24, 1910

Complaint—1 Extreme weakness 2 Severe pain in right lower quadrant of abdomen 3 Pain in left thigh

History of Trouble—States he has always been in good general health. December 6, 1909 while switching cars was caught between a box car and loading dock and rolled. Unable to stand because of severe pain and weakness after being removed from between car and loading dock. Was taken immediately to St. Luke's Hospital.

Examination—On admission he showed considerable shock was cold. Pulse rapid.

General—Negative

Local—Was very tender to pressure over his left hip and right lumbar region. *Ecchymosis* showing in these locations.

Treatment—Was put to bed and restoratives administered and treated locally with heat. Required morphin for the relief of pain.

He promptly recovered from the immediate effects of his injury and left the hospital on the eleventh day able to walk but still lame where he had been injured.



Fig 762

Subsequent History—Five days later he came into my office and I found just above the crest of his right ilium a tympanic partially reducible tumor mass about the size of an adult fist (Fig 762). The injury to his left thigh proved to be only a bruise. At this time the secondaries of syphilis were also noted.

Diagnosis—Traumatic hernia.

Operation—December 29, 1909 (twenty three days following injury) under ether anesthesia a longitudinal incision was made

over the bulging mass above the crest of the right ilium and bowel was encountered subcutaneously. The muscular attachments to the crest of the ilium had been torn off slick and clean.

Inasmuch as operation had been delayed as long as it was the bowel, principally cecum, was adherent in the subcutaneous tissues. The incision was extended upward until normal abdominal wall was found and the peritoneal cavity entered. It was fairly easy, once within the abdomen, to free the torn edges of the peritoneum and bowel and to return the bowel to the abdominal cavity and close the peritoneum. As would naturally be expected, the muscles which had been torn from their attachments had retracted, and this was found to such an extent it was impossible to bring them again to the crest of the ilium without undue tension. Consequently the incision was extended downward and a flap of fascia lata with its attachment to the crest of the ilium was reflected upward and the torn muscles and fascia sutured to this using twenty day chromic gut. Subcutaneous drainage. The wound healed without infection. After two weeks in bed and under antisyphilitic treatment the patient was allowed to sit up. The suture of the abdominal muscles to the fascia lata held, and on discharge from the hospital twenty seven days after the operation there was no bulging. He passed from under my observation, but I heard from him later and saw him again. At this time there was a hernial protrusion anterior to where he had his original hernia.

This man never returned to his usual work, but the last I heard from him about five years later he was conducting a small mercantile business.

Result—Improved

Comments—Both these cases were genuine traumatic hernie and they ran true to form illustrating that in this condition there are serious primary symptoms and possibly associated injury, that the hernia has no peritoneal sac and becomes irreducible in a short time.

CASE III TRAUMATIC BURSTITIS OF RIGHT PALMAR BURSA

R W M Age forty four Mechanic Entered St Luke's Hospital November 29 1927 Discharged December 27 1922 Result Improved

Re admitted April 18 1923 Discharged May 31 1923

Complaint — Pain and tenderness in palm of right hand

History of Trouble — Says he had always been in good general health and able to pursue his work as a mechanic up until the latter part of 1922 On October 25 1922 while guiding a driving rod (weight about 4000 pounds) of an engine on to pin the strap on the pin pole broke letting the driving rod fall about 30 inches

After the rod had fallen it tilted over catching right hand between it and hub of drive wheel Was able to get hand out without assistance

Immediately afterward his hand pained him some in the region of the fifth metacarpal bone but he kept at his work Next day his hand hurt him so much that he consulted a physician who put a pad in the palm of his hand and bandaged it tightly This same day thinks he noticed swelling on the ulnar side palm of hand

The pain in his hand persisted being sufficient to keep him awake nights and eleven days later he quit work because of the pain and swelling in his hand Did no work and received no treatment for twelve days when he again attempted to resume his occupation but had to quit after two days During this time had consulted a second physician who put the hand in a molded plaster splint He was wearing this when he entered the hospital

Examination — *General* — Negative

Local — Just above the annular ligament on the ulnar side flexor surface of the right wrist is a swelling about 1 inch in diameter and only slightly elevated above the skin level When pressure is made over the swelling which is moderately tender but not red and the hand palpated below over the hypothenar eminence a fluid in which it appears small bodies are floating is felt coursing beneath the annular ligament Pressure over the hypothenar eminence reproduces the swelling in the wrist

Blood and urine negative

Blood Wassermann negative

An x ray of the hand made at this time was reported negative

First Operation—November 30 1922, under local anesthesia, the swelling above the annular ligament was aspirated and about 5 minims of a clear fluid withdrawn



Fig 763



Fig 64

This was examined microscopically and found to contain a few red cells leukocytes and large mononuclear cells

Postoperative Course—The hand was again put in the splint and in a few days he began soaking his hand in hot water December 23d he left the hospital his hand not paining him and with swelling and tenderness practically gone His hand however felt somewhat stiff

Early in January 1923 he awakened one morning to find his hand pained him again. Pain has persisted and swelling had returned when I saw him on March 9 1923. At this time he was having as much distress as he ever had and was again unable to work.

April 18 1923 he was readmitted to the hospital primarily for acute alcoholism. On his recovery from this he was transferred to my service.

In order to demonstrate that the palmar bursa was involved the swelling above the wrist was injected with a 25 per cent sodium bromid solution and a ray films made. These showed a shadow quite wide and extending practically along the entire length of the fifth metacarpal bone (Figs 763 764).

Second Operation — April 24 1923 under ether anesthesia an incision was made into the swelling above the annular ligament and into the bursa below the annular ligament without dividing this structure. A bloody fluid escaped. No solid particles were found in the fluid although before injection with the sodium bromid they had seemed to be present. Connection between the parts opened under the annular ligament was easily demonstrated with a probe. The walls of the bursa were considerably injected but there was no evidence of pus. Curetage of the bursa was done and the wound closed without drainage. The day of the operation *i e* one day following the injection of sodium bromid a bleb — inch in diameter was noticed over the bursa. This was drained and an alcohol compress applied as part of the postoperative dressing. A plaster splint was molded to the hand and forearm.

No infection of the operative wound or bleb occurred but a moderately deep necrosis at the blister site occurred which was slow in healing.

He was discharged from the hospital forty nine days after his operation as cured his prolonged stay in the hospital being due to the slow healing of the slough at the bleb site. I have seen him since he is working and is having no evidence of any bursal trouble.

Comments — The history physical examination x ray labora-

torv and operative findings prove beyond doubt that this was a case of palmar bursitis probably caused by his injury. It was thought rice bodies would be found in the fluid but they were not present. Possibly the sodium bromid injection may explain this.

The prompt recurrence of this man's symptoms following simple aspiration and rest indicate that this treatment is not sufficient and what happened in his case is what usually occurs, *i. e.*, prompt recurrence of the trouble.

In order to affect a cure more radical means must be applied, and a destruction of the bursal walls accomplished. This may be done by thorough cureting or by packing the wound with gauze allowing it to heal by granulation.

CLINIC OF DR CLARENCE B FRANCISCO

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE DEPARTMENT OF
ORTHOPEDICS

PRESENTATION OF CASE OF TUBERCULOSIS OF THE KNEE ONE YEAR AFTER EXCISION OF THE JOINT

MR E D (Hospital No 11 644) This man was admitted to Bell Hospital January 6 1922 Discharged March 14 1922

Diagnosis —Tuberculosis of right knee

History —Six years ago patient worked on a machine that required using a lever with the side of his right knee and observed that his knee was stiff and sore at times had some swelling but not much disability and continued at work Was treated here in the Dispensary at that time (1916) having the knee strapped and condition improved then was worse for a while He continued having these relapses every few months gradually getting more and more disability but has been up and about all the time although for the past six months has been on crutches and having considerable pain some loss of weight and a little fever

Physical Examination —Well developed and nourished man weighing 142 pounds comes in walking with a cane and crutch right knee in flexion of 135 degrees with only about 5 degrees motion marked muscle spasm and capsular thickening no abscess or sinuses other joints negative general condition fairly good Wassermann negative urine negative

x Ray —Shows erosion and bony destruction of both condyles of right femur also head of tibia (Fig 765)

Family History —Negative for tuberculosis cancer and rheumatism

Past History —Negative for disease or injury Has been an athlete his specialty being sprinting

Operation (January 10 1922) —A curved incision was made on the anterior surface of the knee and carried down into the

fairly firm but x ray shows lack of calcification of callus Told to wear a support for a year

This man came in today March 17 1923 or fourteen months after his operation and these pictures were just taken (Fig 766) You can see that he has a strong firm bony union No motion can be demonstrated in his knee and he has been symptom free but has only been without the support for two and half months and still feels the necessity of protecting the joint On the whole his condition is satisfactory and there is every indication that

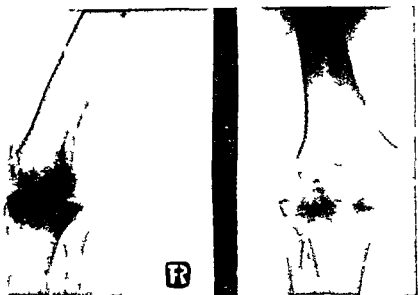


Fig 766 —After operation

the diseased process has entirely stopped and there is not much danger of it ever flaring up again

Conclusion —The early diagnosis of tuberculosis of the knee joint in the adult is difficult In my opinion any chronic condition of the knee with no other joint involvement that has never been acute should always be considered tubercular until proved otherwise and that as soon as the diagnosis is established the joint should be excised and it is not necessary to use any grafts or extra sutures to secure union if the surfaces of the tibia and femur are brought into perfect apposition A support should be worn for a year

PRESENTATION OF CASE OF BONY ANKYLOSIS (FROM A NEISSERIAN INFECTION) OF KNEE JOINT AFTER EXCISION ILLUSTRATING COMPLETE FIRM UNION IN THREE MONTHS

M G (Hospital No 12 734) Colored Age twenty eight years This patient was admitted to Bell Hospital January 1 1923 Discharged January 22 1923

Diagnosis —Bony ankylosis of left knee

History —Twelve years ago left hand suddenly swelled and became painful lasting two days then right hand became painful and swollen for about three days then left knee became swollen, painful and stiff confining the patient to bed for two month with extreme suffering then she began gradually getting about and has used a crutch since not on account of pain but on account of deformity

Physical Examination —Comes in walking with one crutch with left knee fixed in the attitude of 145 degrees extension no thickening of the capsule no spasm and no tenderness but some atrophy of thigh and calf muscles otherwise negative and is a strong and well nourished woman weighing 150 pounds

x Ray —Shows bony ankylosis of the knee joint (Fig 767)

Wassermann negative Urine negative

Operation —Elliptic incision was made about the knee knee-joint opened a wedge shaped piece of bone was removed in order to overcome the half flexion the wedge being fashioned in such a manner as to permit 10 degrees flexion when the ends of the bone were in perfect apposition Wound closed in layers Spica cast then applied

Pathologic Report —Bone fragments nothing found (Signed W R Wahl) This patient came in today April 7 1923 or three months after operation walking without crutches is entirely symptom free but has been wearing her cast which was just removed and these pictures made (Fig 768) You will note there is firm bony union with just the right amount of flexion

and the patella is mortised in a position that gives great stability to the joint. We will allow all support to remain off and give her complete freedom of the leg.

Conclusion—This case illustrates the usual end result of gonorrheal infection of the knee in a growing individual. The usual end result in the adult is a fibrous ankylosis and a very painful joint which in my opinion should be resected or mobilized. In this case we operated merely to straighten her leg and did not consider a plastic operation for the reason that the muscles



Fig 767—Before operation

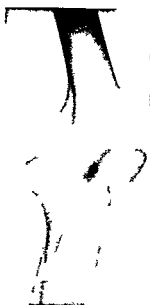


Fig 768—After operation

that move her knee have been out of commission for twelve years and probably could not have been trained to again take up their function also because she has not the time and finances to enter into a long questionable procedure. These points should always enter into the consideration of whether you will attempt a resection or a plastic operation. In doing a resection you know what your end result is going to be but in a plastic it is uncertain and in this case I feel sure we have chosen wisely.

CLINIC OF DR ROBERT McEWEN SCHAUFFLER

RESEARCH HOSPITAL

SOME COMPLICATIONS FOLLOWING INTERNAL FIXATION IN FRACTURES OF THE FEMUR

OUR first case this morning is for a resection and suture of the external popliteal nerve near the head of the fibula for paralysis. This is only one of the many troubles to which this unfortunate patient has been subjected. A year ago he suffered a simple fracture of the left femur. He was treated from the start in a hospital by a general surgeon who cut down on the fracture and made an Albee slide inlay and then put the limb up in a plaster cast, which was replaced on several occasions. The patient suffered great pain in his leg and foot as well as in his thigh. At the end of five months when I first saw him he was still in bed at the hospital with a malunion of the femur and an inward angulation of 40 degrees (Fig 769). The limb was mummified; there was a paralytic drop foot with marked organic contraction of the tendo achillis; no evidence of power in the dorsal flexors of the ankle or toes. A tenotomy of the tendo achillis was made and the foot fixed at a right angle. The patient was then given vigorous physiotherapy for six weeks after which the malposition of the femur was corrected by operation. It was deemed undesirable to introduce any foreign material even bone if it could be avoided. A narrow V shaped piece of bone was removed with the broad end outward and the limb was pushed inward fracturing the inner callous bar which furnished an excellent backstop against reversing the displacement. Figure 770 shows the x ray taken soon after operation and Fig 771 about seven weeks after. The patient was placed in a Thomas splint in bed and after six weeks gotten up on an ambulatory splint. There was little tendency to displacement and the result was a sound bony union on which the patient has been walking for four or five months.

After union of the fracture was assured external heat diathermia and massage were used vigorously. There was some improvement in the circulation of the leg and the knee joint was gradually flexed to 40 degrees. The external popliteal nerve was exposed over the head of the fibula to which it was found to be adherent; it was freed and transplanted to a fat bed outside of the deep



F g 769



F g 70

fascia. There is no doubt that the injury to the nerve was caused by it being pressed too tightly against the head of the fibula by the plaster cast. After six months there has been no sign of recovery of the paralysis and it is proposed now to resect the portion of the nerve which has been subjected to pressure and suture the fresh ends. There is some power in the calf muscles and the flexors of the toes but the stiffness of the joints does not

permit of any considerable motion. The operation at this time is more or less a counsel of desperation. As far as the nerve is concerned it ought to succeed but it is a question as to whether the muscles are not so completely wasted and converted into scar tissue that they will be unable to respond to any central impulses which may get through. We are all familiar with that terrible



Fig 771

condition known as Volkmann's ischemic paralysis in which the limb is contracted, painful and useless. It seems that the muscles are converted into fibrous tissue, the circulation almost destroyed and the nerve supply severely interfered with. We have found this condition caused by too tightly applied splints and bandages or the limb swelling against inelastic bandages and producing the same effect. We know however that it can

occur as the result of hemotoma beneath the deep fascia making pressure on the vessels and nerves and that it has occurred in some cases where no splints or bandages have ever been applied. Recent experiments by Dr Barney Brooks of St Louis have shown that when the arterial supply was left intact to a large muscle which had been isolated and the venous return almost completely shut off the muscle underwent an intense round celled infiltration as if it were the site of an acute inflammation and was then converted into a mass of scar tissue exactly like the condition found in Volkmann's ischemic paralysis. It seems to me that I am constantly seeing lesser degrees of this ischemic paralysis or fibroses of limbs and that they are due to just the causes set forth above. Practically they are the result of too much manipulation or operation and interference with the circulation by retention in splints or casts which were applied too tightly. In a few cases they may be due to a hemotoma often following a severe contusion or a simple fracture and the trouble could have been prevented by incising the deep fascia and relieving the pressure.

The second case which we have for operation this morning is a man fifty four years of age who sustained a simple fracture of the femur eleven months ago. He was subjected to open operation with the use of a metal band which was followed by suppuration and long delayed union with projection of one of the fractured ends which was cut back by the doctor finally resulting in malunion with persistent suppuration. The patient comes to me now with no hope of having the position of the leg corrected but to get rid of the discharge. The x ray (Fig 772) shows that the bone at the apex of the pur is undoubtedly dead but it is quite difficult to decide just how much other bone is dead or how much of it is newly formed bone. We will inject into the sinus a methylene blue solution under some pressure and hope that it may guide us to any deeper portions of necrotic bone. We expose the angulated femur at the site of malunion by an external incision and we see that here is quite a good sized piece of bone which is dead and which we can pull away with the forceps. You see it is deeply stained with the methylene blue. As we retract

further about the site of malunion no further dead bone can be seen but there is a small tunnel going somewhere into the interior of the bone which is stained with the blue. We are now cutting through healthy bone with the chisel after removing several thick shavings of bone you see we have come to an area which is stained blue and by working around this a little more we are



Fig 772

able to remove a second sequestrum part of which can be lifted out there is a bit toward the inner side which is more or less entangled in the new bone and which we will remove with the small chisel. Now when we mop out with salt solution you see there is no more blue stain anywhere in the depth of the wound. If you look at the pieces of bone laid out on this towel you can see clearly the dead bone stained blue and the healthy bone which

was removed to uncover the deeper parts of dead bone a bright pink. The use of methylene blue injection has been often helpful to me in recovering bits of dead bone which I might otherwise have left in and so failed to give complete relief.

In the last year I have had 3 other cases 2 of which were even worse than these we have seen this morning. All of them were simple fractures of the femur and were converted into compound



F 73



F g 774

fractures by the surgeon. Each resulted in delayed union, malunion, and such injury to the soft parts as to constitute a permanent disability far worse than that due to the bad position of the bones. I think this can be stated almost as an axiom. If you are not a master of external fixation, any attempt to get away by internal fixation of a simple fracture of the femur will incur serious danger of delayed union, suppuration, and malunion with exten-

sive injury to the soft parts. If you are a master of external fixation then internal fixation is seldom necessary in a simple single fracture of the femur. The use of skeletal traction by ice-tongs enables us to handle a number of cases which we could not sufficiently control by skin traction. About the only cases of simple fracture of the femur which should be operated upon are those in

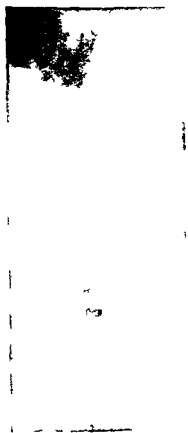


Fig. 175



Fig. 76

which the fractured ends are so irregular that without exposure there is little hope of even fair coaptation and those in which there is muscle interposition.

I have asked the mother of this little girl to bring her to the hospital this morning to illustrate a case in point where operation was absolutely necessary—a case of muscle interposition between fragments. This was a healthy child of three years who sustained

a transverse fracture of the lower end of the upper fourth the bone being broken across a narrow rail by an adult falling across the thigh. The limb which was at nearly a right angle was straightened out and a horizontal extension used on a Bradford frame. The x rays (Figs 773-774) show that the fragments did not clear and did not touch. Vertical extension was substituted but still no reduction. Manipulation under the fluoroscope



Fig 777

under full anesthesia failed to reduce the fracture and did not produce crepitus proving that there was muscle interposition. Open operation showed muscle firmly snagged over the bone end. A small intramedullary splint of oxbone was inserted and the limb put in a plaster cast (Fig. 775). The third day the patient had a high temperature and fearing infection I cut a window in the cast. Also the cast became moistened with urine. There

proved to be no infection of the thigh but there was a colon bacillus pyelitis. With the weakening of the cast by cutting the window and the partial softening by being moistened external fixation was inadequate. At once the intramedullary splint broke and the ends of the bone began to side slip and angle (Fig 776). The cast was not removed but straightened out and more splinting and plaster applied. External fixation was restored just barely in time and the functional result was perfect as shown in Fig 777.

CLINIC OF DR NELSE F OCKERBLAD

BELL MEMORIAL HOSPITAL UNIVERSITY OF KANSAS
SCHOOL OF MEDICINE

EARLY PAPILLOMA OF THE KIDNEY PELVIS

HEMATURIA is frequently a sign of tremendous importance to the patient. We are presenting today a patient who has had hematuria continuously for two years. We have had him under observation for little over a year in the Out patient Urological Department. He states that there never has been a time in the past two years that his urine has not been bloody. There has been no pain either over the kidney region or referable to the bladder or urethra. There has been no dysuria or frequency. The one outstanding symptom is hematuria. The patient insists that the onset of this hematuria was two years ago following a strain of his back after lifting a piano. He says that blood in the urine was noticed for the first time the next morning. This patient could easily be classed as a case of essential hematuria and put on palliative treatment in the hope that the hemorrhage would clear up. The term essential hematuria means that we do not know the cause of the bleeding. It should mean further that it is most essential to find out why the patient has blood in his urine. About 80 per cent of all cases of hematuria come under three heads namely stone tuberculosis tumor. From this one can readily see the gravity of hematuria and the urgent necessity for exhausting every means of diagnosis at hand in order to discover the basic cause. We are certain that this patient bleeds only from his left kidney. We have repeatedly cystoscoped him during the past year and the blood has always been found spurting out of the left ureter. A complete urologic examination has been done since the patient has been admitted to this hospital summary of which is about as follows

There is no obstruction in the ureter or prostate to a No 24 cystoscope. The bladder capacity is about 6 ounces. Several ounces of chocolate colored bloody urine was washed out of the bladder and when the bladder was filled with clear media blood



Fig 778—Pyelogram showing a large polypoid mass in the left ureter.

could be seen purting from the left ureter. This ureteral os was readily catheterized and the catheter passed to the kidney without obstruction. Bloody urine was obtained from this left catheter. The right ureter was seen normally placed on the trigone and was

seen to spurt freely and normally and was catheterized easily the catheter passing up the ureter about 10 cm but it would go no further. The urine from this right side was clear. The appearance time of the phenolsulphonephthalein was four minutes on either side. The right side put out 12¹/₂ per cent of the dye in twenty minutes. The left side only about 2 per cent. Blood and pus were found in the specimen from the left. The right shows no pathologic findings. The importance of continuous bleeding cannot be overstressed. It is suggestive of kidney tumor but stone as well as tuberculosis can do the same thing. Pyelograms were made. A study of these plates does not help very much in a positive way. On the right we have a normal pelvic outline. On the left there is a double pelvis. The outline is somewhat blurred probably from movements of the diaphragm and neither ureter is dilated. From these pyelograms one could rule out tumor as there is no rotation of the kidney and no distortion of the pelvis. As for a diagnosis we are no nearer now than before. We have only these facts. We know this patient passes blood in the urine constantly and has done so for two years. We know it comes from the left kidney. We are sure the right kidney is a good functioning organ. We have ruled out stone and although we find no acid fast bacilli we have not as yet positively ruled out tuberculosis. It is doubtful however if this is tuberculosis. The clinical picture is not right. Tuberculosis seldom causes continuous uninterrupted bleeding.

Kidney surgery today is very much improved over what it was twenty years ago but there are many unsolved problems. It would seem to be equally bad to not do enough as it is to do too much. The problem as to when to do a nephrectomy and when to temporize is not at all an easy one. In this case we are going to cut down on this kidney believing that any patient who has had continuous bleeding observed over such a period of time is entitled to the benefit of having his kidney examined in an exploratory way. The patient has now been anesthetized and has been placed on the table with his right side down exposing the left loin and kidney region. A curved lumbar incision is made starting at the tip of the twelfth rib curving forward and downward to

the level of the anterior superior spine. As we cut through the muscle layer we see the yellow fascia of Zuckerkandl exposed. This is cut through with the scissors and the hand introduced into the wound. The wound is now enlarged above and below with scissors and the kidney is searched for. The kidney is found lying high up under the diaphragm. We find that it has some adhesions about it. After stripping these off it is evident we are

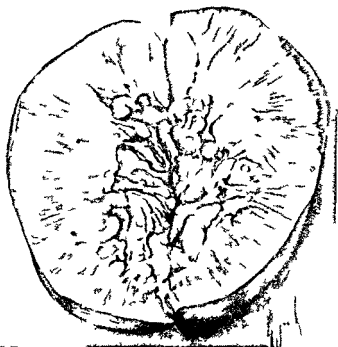


Fig 779—Cut through the pelvis and the blood vessels

dealing with a kidney with a short pedicle. It is rather difficult to deliver this kidney into the wound. The kidney itself appears like a fairly normal one. There is no evidence of pus, no palpable masses except along the ureter. In palpating the ureter we find that there is a suspicious nodular substance present. On account of this history of bleeding and the suggestion that this might be malignant we will do a nephrectomy.

The ureter is stripped and palpated as far down as possible. We are cutting the ureter well below the masses that have been felt through it. The clamp is now applied to the vessels and the kidney cut loose. The kidney vessels are tied each one separately and the wound is closed layer by layer without drainage. The patient is being taken from the operating room and is in good condition. We will now turn our attention to the specimen we have just removed. We will first open this piece of ureter we have and see what it contains. There is a small deep red tumor like mass in the mucosa of the ureter and numerous purplish red patches are present in the kidney pelvis as well. Undoubtedly it is this that has been causing this man's bleeding. We are probably dealing with a very early papilloma of the kidney pelvis. We shall await with interest the report of the pathologist as to his microscopic findings.

Progress of the Case, Discussion, and Pathologic Report — Following is a copy of the pathologic report by Dr. Wahl, Pathologist at the University of Kansas School of Medicine. The specimen consists of a section of the ureter which is open and measures 3 cm. in length by 1 cm. in width. The mucosa is considerably thickened and there is some submucous hemorrhage. There is no hemorrhage on the surface. In addition there seems to be a small soft hemorrhagic flattened warty tumor like elevation at one side measuring about 5 mm. in diameter. There is no ulceration on the surface. The kidney measures 10 by 6 by 3½ cm. and weighs 110 grams. It is of normal consistency. The capsule strips off with a little difficulty. The cortex has rather a pale brown color showing small pin point hemorrhages in the substance of the cortex. There is also some congestion of the cortical vessels. The section cuts readily and the cortex measures from 7 to 9 mm. in thickness. The pyramids are about twice as thick as the cortex. There is a considerable amount of peripelvic fat. On opening the pelvis it is found to be divided into two distinct portions. One portion goes to the upper pole of the kidney and the other to the lower portion. And the wall of the mucosa is considerably thickened. There is abundant hemorrhage just underneath the epithelial lining. In some places there

seem to be slight somewhat congested wart like elevations protruding above the surface giving a somewhat velvety appearance. There is also considerable congestion and hemorrhage in the tissue immediately about the pelvis. A few pin point hemorrhages could be seen in the pyramids. These however were not very striking being in more indirect contact with the calices and

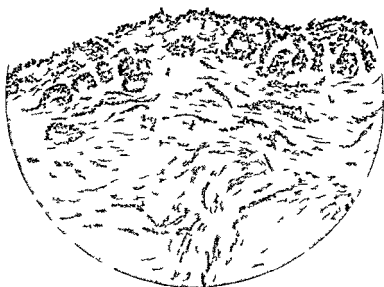


Fig 780—D w g f m m s c p t n h w g t h p p l i m d s c b d
t h p t h l g t p t

the mucous membrane about the calix. In the medulla at one side there is an opaque white nodule measuring 3 to 4 mm in diameter suggesting a cellular fibroma.

Histologic Pathology—One of the sections taken through the ureter shows some hyperplasia of the epithelial cells in the mucosa and underneath this layer of the mucosa there is a considerable area of hemorrhage. The walls submucosa and mus

cularis of the ureter are also considerably thickened and show irregular foci of lymphoid and small mononuclear leukocytes. In addition along the outer portion there is more or less extensive diffuse hemorrhages. The mucosa is in several places more or less completely desquamated. In some places the leukocytes tend to cluster about small dilated capillaries. Many of the capillaries are filled with hyaline thrombi. Thrombi are also present in some of the smaller veins both in the submucosa and throughout the walls of the ureters. In some of these small veins the thrombi show beginning organization. In another section there is a peculiar type of proliferation of the epithelial cells, these cells projecting down into the underlying tissue in the form of solid balls of polygonal or rounded cells which are fairly well circumscribed from the surrounding tissue. The basement membrane seems to be absent in some places. The cells are as a whole uniform in appearance though there is some irregularity. The picture somewhat suggests a beginning malignancy of a flattened papilloma of the ureter. These epithelial masses are rather diffuse along the entire section in one of the slides. In this location there is considerable ulceration of the mucosa and the same chronic inflammatory tissue throughout the wall of the ureter already noted.

'The kidney shows very marked cloudy swelling effecting the convoluted tubules. In some places the lumina of the tubules are entirely occluded by swollen cells. In other places the inner portion of the swollen cells are more or less disintegrated. The glomeruli are swollen. There are a great many more nuclei in the glomeruli tufts than is usual. The endothelial cells also appear to be swollen and there are relatively few red blood cells in the capillaries. Most of the capillary lumina seem to be obliterated. The interstitial tissue shows a few patches of slight increase in fibrous tissue this however is not marked. There is some congestion of the vessels and in some places distention of the lymph vessels. The stroma in the medulla particularly near the pyramids show a peculiar myxomatous type of change with considerable edema intervening. The tissue around the pelvis shows marked congestion and considerable diffuse hemorrhage recent

bling a picture which is very similar to the ureter. The epithelial changes are also as a whole similar to that noted in the ureter. What are apparently hyaline casts are found in many of the collecting tubules. At one corner of the kidney in the section of the medulla there is a nodule composed of interlacing bundles of young connecting tissue in other words a small fibroma. There are some lymphatics which are enormously distended with a homogeneous eosin staining material. Fibrous tissue changes may be seen in some of the glomeruli particularly in those areas where there is considerable increase in the fibrous tissue of the stroma.

Diagnosis—Papilloma of the ureter and pelvis (multiple) chronic hemorrhagic ureteritis and pyelitis also chronic tubular nephritis.

This patient made an excellent recovery wound healed by primary union and the patient left the hospital on the eighth day after the operation. He has returned to work and has been in perfect health ever since. We believe that in this case we happened upon a very early papilloma of the kidney pelvis. From the pathologic report we can see that we are dealing with a papilloma with a malignant tendency if indeed there are any that do not have a malignant tendency. Needless to say this is an extremely rare case. Authors who have searched the literature and collected cases report prior to this case 56 cases of papilloma of the kidney pelvis. From the description of these other cases this case herewith presented is by far the earliest case of papilloma of the kidney pelvis that has yet been reported. These capillary tumors of the kidney pelvis are quite unlike the adenomatous papillomas which sometimes grow in the substance of the kidney. Ordinarily these tumors of the kidney pelvis do not infiltrate the kidney substance but tend to pass down the ureter. The etiology of these papillomas of the kidney pelvis is not any clearer than the etiology of papillomas anywhere. However in this case we do not know whether there has been a chronic low grade infection in this kidney pelvis and if this continued irritation tended to give rise to a papilloma. We are satisfied that in this case we have done the right thing for this patient. We are

also satisfied that this papilloma was confined to the kidney pelvis and the upper portion of the ureter. The removal of this kidney undoubtedly cured this man. Had this been permitted to go on it certainly would have escaped from the bounds which held it and gotten into the bladder or extended through the ureter and attack other organs. It is not infrequently observed that these papillomata which certainly resemble bladder papillomata may suddenly change their character and become very malignant. They may have early metastasis after having changed their form. This is a very fortunate case. It is one of those cases where the surgeon feels satisfied that radical measures were justified. On the other hand had we removed this kidney for hematuria and found no pathology we would have felt that we had made a mistake and had not done the fair thing by the patient. So we see the problems in kidney surgery are not at all simple. Many times judgment must be given at the time of operation. If the surgeon is wrong either way the patient may suffer and may even pay for the mistake with his life.

PARAFFIN FOREIGN BODY IN THE BLADDER WITH CALCULOUS FORMATION

WE have for operation today a patient who has complained of painful and frequent urination for the past four months. He is as you see a white male. He gives his age as fifty nine years. He has a frequency of every fifteen minutes with strangury. The frequency is about as bad at night as it is in the daytime. He has noticed blood stained urine at times. Frequent and painful urination is pathognomonic of no particular disease of the urinary tract but is common to a vast variety of such maladies.

An attempt was made to cystoscope this patient before he was sent to this hospital but this was apparently not successful as no pathology was discovered. The patient was cystoscoped yesterday. The urethra admitted a No. 24 French cystoscope without difficulty there being no obstructions in the urethra or prostate. There was no residual urine. The bladder capacity was 100 c c. The patient complained bitterly of pain on dilating the bladder with fluid. There was no prostatic collar and there was no enlargement of the prostatic gland to rectal palpation. Reposing in the most dependent portion of the bladder (the patient in a prone position on his back) was seen a rough calculus of moderate size. The ureters were seen normally placed the openings being greatly dilated. The mucous membrane throughout was greatly inflamed and was rolled up into great velvety ridges.

Following the cystoscopy the patient was taken to the x ray room where the bladder was filled with 15 per cent sodium bromid solution. 110 c c of sodium bromid solution was introduced. The patient complained of a great deal of pain from this dilatation of the bladder. Before the sodium bromid was introduced however a plate was taken. Sodium bromid plates were made in stereo. A study of the x ray plates which we have here reveals to us a calculus which is not as dense as one would have

believed from the cystoscopic picture and which casts only a faint shadow however it is well defined There are no pouches or diverticula seen in the stereo plates of the injected bladder The striking feature about this roentgenogram is that the dilated ureters have permitted the opaque media to mount up to the kidney pelves on either side and outlining them well You will note that the ureters are both dilated

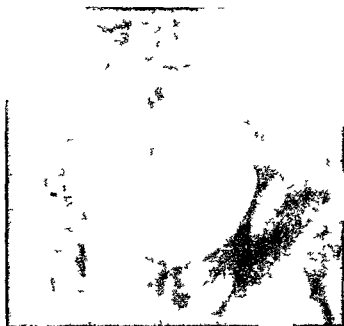


Fig 781 — Ray f th bl dd h w g th l l

From the foregoing discussion it can be seen that we have made a diagnosis of calculus in the bladder and that we are about to do a suprapubic lithotomy The question of operability of this patient arises We must ask ourselves whether or not the patient is a good surgical risk We have here before us a rather thin poorly nourished patient of about the stated age The physical examination is essentially negative The urine contains a trace of albumin it is acid and the specific gravity is 1.020 It also contains on microscopic examination red blood

cells and many pus-cells. There are no casts present. The blood pressure is 130 systolic 86 diastolic. The red blood count is 4 840 000 with 85 per cent hemoglobin 11 000 white blood cells 70 per cent polys. coagulation time is two minutes. In addition to this he has a blood urea of 18 milligrams per 100 c c.



FIG. 52.—Cystogram in which the sodium bromide solution has mounted up the dilated ureters and outlined the kidneys and pelvis.

phenolsulphonephthalein output was 40 per cent for the first hour.

A patient with the above findings should be a fair surgical risk for the operation which we are about to do. Were it not for the fact that he is an extremely irritable nervous type of a per-

son who apparently is unable to control himself by his own volition we would perform this operation under local anesthesia. However in this case we prefer gas anesthesia. The patient now having been anesthetized we will proceed at once to open the bladder. Our assistant has placed the catheter in the urethra and is washing out the bladder with sterile water. The incision is now made in the midline just above the symphysis pubis upward toward the umbilicus about 8 cm cutting through the skin and fascia and exposing the rectus muscle. This sheath is incised the muscle turned aside and we are down to the bladder coverings. Our assistant now fills the bladder with fluid and the bladder mounts up into the wound. We strip the peritoneal



Fig 783—The p f m b dy wh h fit pe f tly f gm t f th l l
th t l d f m d bo t t

reflexion and expose the bladder which we identify by its tortuous veins. We are dealing with a small contracted inflammatory bladder. We now seize the bladder by two stay sutures which we have placed and make an incision between them. The fluid with which the bladder has been filled pours out and three foreign bodies have floated out which we will put aside for further examination. Sweeping our fingers around the bladder we discover no pouches or diverticula however the ureters are very much dilated and will admit the tip of the index finger. We feel a calculus in the dependent portion of the bladder. This is in the shape of several fragments. These we are removing. All the fragments of the calculus being removed we will proceed with the closure. The tube is now secured in the bladder by purse

string sutures and a cigarette drain is placed in the space of Retzius and the wound closed layer by layer. The anesthetist reports that the patient is in good condition, is already awake, in fact and is ready to be taken from the operating room.

Let us now turn our attention to these peculiar bodies which floated out of this bladder. The fact that they floated out indicated they were much lighter than the water with which we filled the bladder. One can readily see that they are composed of some waxy substance, probably paraffin. The fragments of the calculus have the appearance of a shell, which in fact it is as they can be fitted over the largest of the three pieces of paraffin. We must now alter our diagnosis to include foreign body in the bladder. The paraffin evidently acted as a nucleus or a foreign body and the phosphatic deposits were laid down upon it. This is a very unusual condition. Paraffin ordinarily does not act in such a manner. It is difficult to see how urinary salts would stick to a waxy surface like paraffin. There have been several cases of paraffin foreign body in the bladder reported in the literature. The problem of how these paraffin lumps get into the bladder is not always easy of solution and certain facts which the patient may have will be necessary before we have the answer. Paraffin is absolutely foreign to the human economy. It must be introduced from the outside. Cases have been recorded in which paraffin has been found in the bladder having been introduced by an attempt to cure a hernia by injection of this substance. Paraffin has also been introduced into the urethra by persons with perverted sexual tastes. Dr Ernest G. Mark recently told me about a case of his in which he twice removed paraffin bodies from the same bladder although the patient denied any knowledge of how these bits of paraffin were introduced.

Discussion of the Progress and Outcome—The patient was rather unruly and of a very nervous and restless type and some time during the first night after the operation pulled the tube out of his bladder. However, he made good progress until about the fourth operative day when his temperature began to rise. At this point we obtained some very interesting history which

threw light upon how this paraffin got into the bladder. The patient stated that he had been an alcoholic for years and that just about a year ago he and some friends of his had a drinking party which lasted about a week. When he began to sober up from this he noticed an intense burning in his urethra. This brought to his mind the relief he obtained some eighteen years before from some soluble bougies which were introduced into his urethra for a urethritis he had at the time. He had been taking treatment from some advertising doctor. He stated that for many years he kept these soluble medicated bougies on hand and occasionally used one. Not having any of these bougies at the time he proceeded to make some by cutting long strips from a paraffin candle. These he made cylindric by rolling them between the palms of his hands and introduced two or three of these into the urethra. He was fortunate in the selection of the paraffin as it evidently had a low melting point and slipped readily into the bladder. This very interesting bit of history confirms our notion that when paraffin is found in the bladder it must always have been introduced from the outside.

As soon as the patient's temperature began to rise we again checked his blood chemistry and found that his blood urea had risen to 96.67 and the blood chlorids had fallen to 380. creatinin was 1.8. He gradually became more toxic and died in coma on the seventeenth day after operation. An autopsy was obtained and a summary of the report by Dr. Wahl follows:

The lungs showed evidence of metastatic pyogenic infection with areas of healed tuberculosis and large healed caseous nodules together with bronchopneumonia. Both kidneys were enlarged and the perirenal capsules found to be adherent and to contain a small amount of pus. Numerous small abscesses measuring from 1 to 3 mm. were found on the surface of the kidney and extending into the cortex. There was no evidence of a chronic nephritis. The ureters were distended but soft and not infiltrated. There was found a large abscess at the base of the bladder with a marked pericystitis.

The anatomic diagnosis as given by Dr. Wahl reads:

Acute and chronic hemorrhagic and diphtheric cystitis

perivesical abscess suppurative nephritis with embolic abscesses of the lung bronchopneumonia parenchymatous degeneration of the heart liver and kidneys edema of the lungs chronic nephritis atrophy of the spleen chronic pleurisy with adhesions anthracosis fibroid nodule purulent bronchitis

Summary of the Discussion—This case is a very interesting one from several viewpoints. In the first place we operated on a man with resistance greatly lowered from chronic alcoholism. Again we have a patient who had a very severe grade of cystitis much more severe than we had believed at the time of operation. Owing to the bladder condition the kidneys were not catheterized and checked separately so we might have overlooked the possibility of an infection that should have been cleaned up in advance. It is usual for these cases to clear up at once as soon as the bladder is properly opened and drained. We have in the next place the condition as above stated complicated by a foreign body in the bladder which had been incrustated with a phosphatic deposit and further we had what should probably and properly be called a congenital dilatation of the ureters. Whenever ureteral openings are found large enough to admit the tip of the index finger the ureter not being diseased or the walls thickened by inflammatory process one is almost forced to the conclusion that they have always been in this condition. We know that congenital malformations of the urinary tract are notoriously subject to infection. It is conceivable that in this case we might have had an ascending infection by direct extension up the mucosa. However we need no such explanation to account for the end result. Undoubtedly there was a pericystitis with abscess formation the organisms from the abscess being carried to all the organs of the body and death resulted rather from generalized septicemia than from kidney failure.

CLINIC OF DR ELMER D TWYMAN

CHRISTIAN CHURCH HOSPITAL

RAYNAUD'S DISEASE TROPHIC ULCER PERIARTERIAL SYMPATHECTOMY

THE case to be presented is a man age thirty three complaining of a chronic painful ulcer of the left great toe See also the color changes in all the toes and the fingers (Fig 784) All the extremities are both subjectively and objectively cold His feet and toes are painful excruciatingly so when chilled There has never been actual frost bite

This tendency to cyanosis and pain and coldness in the extremities has been present for three years and has been variously diagnosed Three years ago he was treated for rheumatism at a later time for weak arches also for chilblains for osteomyelitis and for syphilis He has had four negative Wassermann reactions His teeth and tonsils and sinuses have been investigated without result The ulcer on the toe appeared six months ago following a small scratch and has been operated on twice without improvement You note that there is no inflammatory zone and no granulations The edge is crater like i e a trophic ulcer

Examination—Family and personal history negative General condition good Hemoglobin 85 per cent reds 4 200 000 whites 8200

Urine negative

Blood pressure—Left arm 132/74 right arm 118/74 left leg 164/110 right leg 160/98 (popliteal)

Blood sugar 100 mg to 100 c c

Allergy tests by Dr W W Duke response to fruits and bacteria no majors developed by retest

Locally—We see the ulcer described the nails are clubbed the extremities cold painful and cyanotic Pressure on the cyanosed area gives a dead white returning to the previous color by very slow degrees from the periphery Elevation modifies the

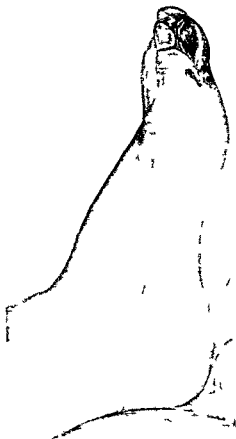


Fig. 84—Raynaud's disease with trophic ulcer

cyano is slowly but not completely and dependency exaggerates it

Diagnosis—Raynaud's disease with trophic ulcer

Operation Proposed—A LeRiche periarterial sympathectomy on the femoral arteries

This operation is on trial and has had some success in this

condition and others which are assumed to be caused by arterial spasm or other disturbances due to involvement of the periarterial sympathetic nerve fibers¹

Other conditions mentioned by LeRiche for trial are causalgia painful stumps posttraumatic contractures and edemas ischemic sequelæ and trophic edemas trophic sloughs varicose eczemas scleroderma and sclerodactylia alopecia etc The operation has been practised in Kansas City by Binnie and by Owens The latter reported cases to the Kansas City Academy of Medicine last year Time will show whether previous claims are too broad Also whether the previous assumption is correct *i. e.* that the principal vasoconstrictor sympathetic nerve fibers if not all run in the sheath and adventitia coat of the principal artery and whether fibers cross lower down from the posterior tibial nerve at the malleolus or lower requiring section or injection there for cure

Operation—My 7 inch incision over the course of the main superficial femoral lies partly in Scarpa's triangle and partly over the course of the vessel in the upper part of Hunter's canal Division of the deep fascia and retraction of the sartorius muscle outward exposes the vessel pocket the artery lying external and later anterior to the vein There are few branches—the sheath is adherent and the adventitia coat more vascular and adherent than normal This appearance might even justify the idea of a mild inflammatory reaction I am now lifting and separating the vessel Its filmy delicate outer coat is grasped with forceps and incised longitudinally See that we have at once the primary contraction of the vessel to one half of its former size and practical disappearance of pulsation as described by LeRiche The nurse says however that the feet still feel warm I now separate this coat around the circumference of the vessel—the complete denudation being about 5 inches Shreds are removed by gauze The vessel is now quite small over the exposed portion The field is dry

Closure—I replace the vessel in its bed and draw over the

¹ Rene LeRiche Some Researches on Pararterial Sympathectomy *Annals of Surgery* vol 74 p 385

sartorius and the deep fascia with catgut and metal clip the skin. The condition being good we will operate the other side also. Here we do not find the same degree of vascularity and adherence and the separation of the adventitia is much easier. This procedure is supposed to give a tolerably permanent block to vasoconstrictor sympathetic impulses. After primary constriction due to the irritation which we see now has subsided (about six hours) there is supposed to follow a period of vascular dilatation due to interruption of sympathetic vasoconstrictor impulses. His cold feet should be quite warm tomorrow.

I complete closure in the same way as before. Anesthetist reports condition of the patient is good.

Follow up. Next day patient reports that the feet feel quite warm and comfortable. No pain in the feet or wounds. Skin of the feet appear flushed reddish rather than cyanotic. He has a tingling sensation on the inner side of the left thigh due to injury of a cutaneous nerve.

One week later patient up in wheel chair. Wounds healed *per primam*. No pain since operation. Feet continue warm. Base of the ulcer shows some granulations and appearance of life.

Two weeks later patient discharged. Granulations in the ulcer more advanced and some skin proliferation from the edge can be noted.

Final blood pressure taken on 4/8/?? Left arm 108/74 right arm 98/74 left leg 140/100 right leg 134/98 (popliteal)

VARICOSE VEINS AND ULCERS INOPERABLE REMARKS ON THE ANATOMY

THIS patient (Fig 785) presents an illustration of unusually developed collateral venous circulation in compensation of obstruction of the deep veins by a bilateral septic thrombotic



Fig 785 —Photographs showing collateral venous circulation

condition which she suffered twenty years ago following child birth. There has been such a complete obstruction of the deep femoral and perhaps even of the iliacs that nearly all the blood from the legs returns through the superficial veins. A visible

pelvic girdle of collateral circulation has resulted. We see the massive dilatation of the gluteal superficial circumflex iliac and superficial epigastric veins besides the saphenous system. This patient has to spend most of her time sitting on the floor as even the dependent position of sitting causes pain and bad effects on her leg ulcers. I consider operation of any sort to be contraindicated and have so advised her physician Dr. Messenger. Dr. Hertzler concurs in this opinion.

The classical Trendelenberg test (descending reflux) is very positive and superficial constriction produces a cyanosis of the limb. The ascending reflux (timed constriction test of Homans of Boston) is also positive. This test is not so well known. Homans says: In varicosity of the surface veins alone filling below the constriction takes place in three quarters of a minute or more and even then these vessels may not be tense for the perforating veins are continually carrying off the excess of blood. If on the other hand the perforating veins are incompetent the surface vessels below the obstruction will fill possibly in ten, twenty or thirty seconds according to the importance of the leak. These two tests serve to separate the pure surface varicosities from those which also have varicosity of the perforating veins.

I do not find myself able to agree with Homans as to the significance of this test principally because I am convinced that the anatomy is not as commonly described and as believed by Homans. After reading Homans' articles in 1917 I read again the anatomies available to me. I found that Spalteholz is clearly of the same opinion as Homans, *i. e.* that blood flows from the superficial system to the deep system of veins in the leg and must perforce do so because the valves in the perforating veins force it to do so unless the perforating veins are also dilated and varicose and the valves incompetent (Homans). Gray, Cunningham, Piersol, Swaboda, Murrich and Told failed to cover the point very definitely. Terrier and Alglave (*Rev. de Chir.* June 1906) agree with Homans. This did not satisfy me for reasons

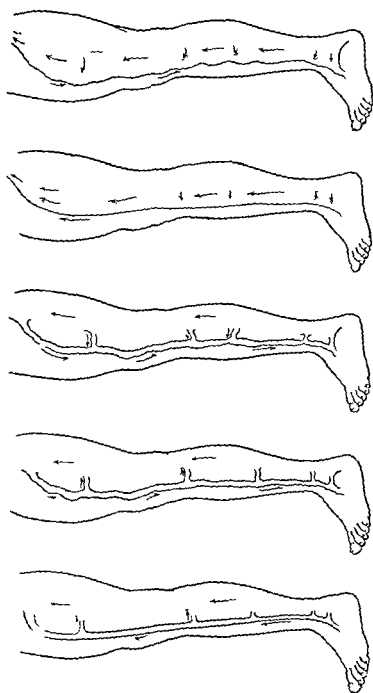


FIG. 786.—1 Diagram of normal anatomy (Homans Surgery Gynecology and Obstetrics vol 24 p 300 1911) Arrows show the direction of flow of venous blood
2 Simple surface varicosity (Homans) Arrows show reversed flow in the saphenous vein
3 Superficial communicating vein varicosity (Homans) Arrows show reversed flow in the saphenous vein also
4 Diagram of the normal anatomy (Twinn) Arrows show perforating veins acting as pathway for inguinal muscular action
5 Condition due to varicosity of the saphenous system Arrows show blood flowing from the deep veins through the communicating vein meeting the blood returning from the saphenous reversed flow Result stasis

I will give presently and I was pleased to receive confirmation from Dr Ranson of Northwestern University also from Dr Congill of Kansas University At my request both had dis

sections made to establish the point and both found that the valves in the perforating veins from two to four in number are so placed that blood flows from the deep system of veins in the leg to the superficial or saphenous system. Neither would say that they were sure that all the existing communicating veins had been found or that some of them might not be free of any valves but all those found were equipped as I have stated. I had theorized that the superficial veins should act as an emergency spillway for the blood from the leg during muscular action and that the valves should be arranged to provide for this action otherwise nature would have provided valves to act contrariwise till the need arose for a spillway and then they must temporarily and providentially become incompetent. This seemed absurd. It seemed equally absurd to suppose that nature had anticipated and provided for the condition arising from the man made and recent garter by arranging valves in the way described by Homans but had not provided for the condition arising during muscular action and I also predicated that muscular spasm or tetany or dinarily known as leg cramps or swimmers cramps should be found to be a factor in the production of varicose veins. Since 1919 when I originally reported this theory to the Jackson County Medical Society I have demonstrated it several times in the history of such patients. At the time of such a cramp the rigid fascial tube allows the tetanic muscle to compress the deep veins completely at some point and the saphenous system is forced to carry all the blood from the leg for a long period. This prolonged strain exceeds the limits of elasticity and recovery and permanent dilatation with varicosity results. The same thing has happened in the case before you although in this case the obstruction to the deep veins is organic and irreparable and destruction of the saphenous system by operation might result in a gangrene of the leg. There are of course other and well demonstrated points in the etiology of varicose veins. For treatment of this case we can only recommend physiotherapy and some form of elastic surface support.

PARTIAL VOLVULUS OF THE CECUM

THIS farmer boy age twenty complains of pain and tenderness in his right side with constipation and gas-pains and a sensation of dragging and pulling in the right flank when he turns on his right side. This will be his third operation for relief of this complaint.

I am presenting this case because it will illustrate one or another of the very diverse conditions of right abdominal pathology underlying the large number of cases who say "I had my appendix removed but I still have pain." If one can truly evaluate the pathology relief can usually be given. We will proceed with the specific instance as the general problem has too extensive a literature to cover in a brief talk.

History and Examination—Since he can remember he has had trouble as described in his right side. In his eighteenth year he had a severe attack diagnosed as appendicitis. The appendix was removed through a right rectus incision. We see the neatly healed 4 inch scar on the abdomen. The acute pain was relieved but the old dull pulling wide spread pain was not. In fact he was more tender than ever. Six months later he was re-operated "for adhesions" and made a good recovery. But he was not relieved of his original complaint. He now felt himself unable to work although of a stolid rather than a neurotic type of individual.

I examined him six months after the second operation one year after the first finding a well healed scar no mass although intermittently bloated no sign of a hernia tenderness and pain as described before. He was advised to temporize and rest and recuperate in the country. Two months later he returned—condition unchanged—but was advised now to await recovery from an acute intercurrent bronchitis. This accomplished he now accepts operation on an exploratory basis.

Operation—As might be expected we find some omental adhesions to the well healed inner sheath of the rectus. There

are also some adhesions of the caput coli to the parietes and to the omentum. These we separate. The amputation site of the appendix is smooth and adhesion free. The cecum is a mobile type. It is twisted clockwise on its own axis—partial volvulus—thus throwing the ileocecal valve posteriorly. As you can see a twist is produced in the ascending colon near the hepatic flex

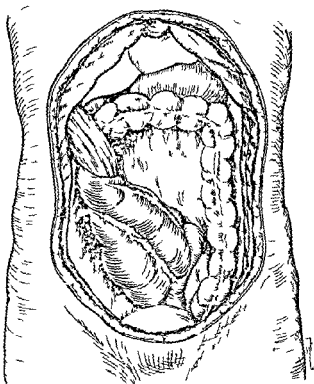


Fig 787—Partial volvulus of the cecum

ure. This narrows the lumen and causes a back pressure in the cecum. We see that the cecum is dilated and baggy. See the parieto-colic hyperfixation band high up on the ascending colon. The clockwise twist of the cecum on its axis would probably not be obstructive in this case if this pivotal band did not prevent the ascending colon from following. As it is, you see the twist (illustration) draws this band down tight like a strangler's noose.

As I divide this band the colon expands from underneath. In order to balance the hang of the colonic drapery I will fix the cecum to the parietes with some stitches. This was Wilms' idea. It seems practicable. It produces balanced tensions. The denuded area above is too large to be covered well by closing the longitudinal cut in the transverse direction so I will interpose a corner of omentum. As I find nothing else abnormal after inspection we have probably remedied the pathology causing the symptoms in this case. Time will tell. We will make the usual closure.

Discussion—This is by no means an extreme illustration of volvulus of the cecum. I am reporting 3 cases of absolute obstruction due to volvulus of the right colon which will be published in the Transactions of the Western Surgical Society next year. Homans reported 3 in the Archives of Surgery last year. Wilms has written extensively on it. Many others accept it. Treves classified the cases into three groups in 1899, yet there are many disbelievers in the idea. Some operators would emphasize the importance of the parieto-colic hyperfixation band which we found here. I think the twist the more important factor since the band would not be obstructive without the twist. However one must try to produce balance. Lack of support above will allow the formation of a secondary loop and volvulus of the second type of Treves. I feel that I must accept complete volvulus of the right colon since I have seen the cases unmistakable and plain and I feel that I must also accept partial volvulus as a clinical entity since the greater proposition contains the lesser.

Follow up—As soon as the postoperative tenderness had subsided—after ten days—the patient was able to say that he had relief from the unpleasant sensations in his side.

Letters six weeks later, six months later and one year and three months later say that relief has continued and that the patient believes himself cured.

5

CLINIC OF DR C C NESSELRODE

ST MARGARET S HOSPITAL

THYROTOXICOSIS—GRAVES DISEASE

IN presenting our cases this morning we will present 2 goiter cases and a gall bladder case that we think are of more than passing interest. The first case to be presented is Mrs B aged thirty two years white and a housewife. Her present complaint is of an extreme tachycardia extreme nervousness the cause of which is well known to her. She has herself observed that she has an exophthalmos and that she also has a slight enlargement of her thyroid gland and without ever having consulted a physician she did know that her symptoms were due to an exophthalmic goiter. She presented herself first at the office some two weeks ago and related the following history.

Early History—Irrelevant to present complaint.

Personal History—Menstruated first at the age of twelve normally and regularly married at the age of seventeen first child born at the age of eighteen this a boy now fourteen years of age in good health and normal in all respects no subsequent pregnancies. Eight years ago she had an abdominal operation the exact nature of which she is not certain but knows that something was done to the uterus. Her appendix was removed at the same time and while under the same anesthetic she had her tonsils removed and a perineal repair. She had a rather stormy convalescence says her throat and mouth were much swollen and she remembers the experience only to shudder about it. Two years following this operation she divorced her first husband and one year later married again. No children have been born of this second marriage although she continues to menstruate normally. Her present marital relationship is not a very happy one.

Present History—Since her past operation experience of eight years ago she has noticed herself to be very nervous cried easily had but little endurance and has observed that at times her pulse was quite rapid during the past year and a half. This nervousness has seemed to increase and she has been conscious most all the time of a rapid throbbing pulse. During this year and a half she has lost 8 to 12 pounds and she has noticed a gradual enlargement of her neck about the thyroid area. She perspires very easily particularly the palms of her hands and this perspiration seems to bear no relationship to any effort on her part or the temperature of the room. For some months past she has had considerable difficulty in sleeping at night has been very restless and found it hard to content herself except when moving about. She has had a number of attacks of diarrhea these appear to be uncontrollable and bear no relationship to her diet.

I think every one will agree that this is quite a typical history of a marked thyrotoxicosis.

Physical Examination—Her physical examination reveals equally interesting things. She is rather anemic rather poorly nourished has a marked exophthalmos with a definite Stellwag and Van Groffie sign and diffuse enlargement of her thyroid a definite pulsation throughout the thyroid gland. It might more accurately be described as a thrill. Her nerve reflexes are all exaggerated. She has a marked tremor of the hands. Her blood pressure is 150 over 90. Her pulse rate varies between 130 and 160. Her heart sounds are normal. Urine normal.

Laboratory Report—Hemoglobin 45 per cent leukocytes 8300 with normal percentages red cells 4 100 000.

And now we come to some interesting laboratory work which has a more direct bearing upon this case. In the two weeks she has been under observation she has had three different metabolic rate estimations. The first one made two weeks ago shows a metabolic rate of 170 a few days later 165 and one two days ago 170 again. She has been in the hospital for the past eight days during which time numerous attempts have been made to do a Goetsch test all unsuccessful because of her extreme ner

vousness When any one comes near her with a hypodermic she becomes almost frantic and it did not seem safe to insist on the test however during one of her early visits to the office we did secure a Goetsch At that time she had a marked rise in her systolic pressure with a very marked fall in diastolic and a slow return of each to the previous reading We have not the time this morning to discuss at any length the question of blood chemistry but this particular case is quite typical of the majority of our observations There is present a marked acidosis the sugar tolerance is reduced and consequently the percentage of blood sugar is increased and there is a very definite disturbance in the nitrogen balance Our observation up to this time will justify us in making the statement that the disturbance in these three things is to a very large percentage proportionate to the degree of toxicity

A brief summary of this case before she is brought in We have here a very typical case of hyperthyroidism or perhaps more accurately speaking marked thyrotoxicosis She has a very high metabolic rate and a very positive Goetsch test Her metabolic rate has maintained a constant high level during the two and a half weeks she has been under observation although during the past eight days she has been in the hospital and has been kept consistently in bed She is by all the standards we know a very poor surgical risk We approach this case with a very definite knowledge that if much is done in a surgical way that she will not withstand the shock of the operation so what we contemplate doing this morning is only a ligation of her right superior thyroid We quite agree with those who contend that in doing a ligation of the superior thyroid one does more than merely reduce the blood supply and that the doing more is probably an interference with the sympathetic nerve supply to the thyroid gland We are ready and you may bring in the patient This patient has been given gas oxygen in the outside room and it is our experience that one can do a ligation under gas oxygen more quickly and with less surgical risk than under a local anesthetic Our incision is approximately 1 inch in length transverse and just over the upper pole of the thyroid

usually it is on a line with the thyroid cartilage. The muscle fibers are retracted. The sternocleidomastoid muscle is of course retracted outward. The upper pole of the thyroid uncovered. The superior thyroid identified and a ligature passes around the vessel with a ligature carrier or an aneurysm needle. Before the ligature is tied we like to again survey the field and make sure that our vessel is within the ligature and if so we are then ready to tie the ligature. We pass also a second ligature and again tie this time getting down close to the upper pole of the thyroid and we do not care if a small amount of the upper pole is included in the ligature. We have tried cutting between the ligatures. We have not been able to find that it has any advantage and we did have one unpleasant experience in that the vessel slipped out of the ligature and we had a severe hemorrhage which was hard to control. Inasmuch as the patient was very toxic and time quite an element it was a rather embarrassing experience and one that we do not care to have repeated. The wound closed in the usual manner with catgut suture material and a collodion dressing applied. The procedure has taken but a few minutes time and the patient will be returned to bed in practically as good condition as she was when she came to the operating room but we feel perfectly certain that she will have considerable storm following this surgical interference. Every effort will be put forth to keep her quiet to protect her from any nervousness or any excitement. Alkalies will be given freely and fluids crowded to the limit. Of course we will use morphin to control any pain and to aid in controlling the excitement. And let me add this that we use morphin straight that is no atropin for it has been my experience in these toxic cases that atropin does not act well.

Before the next case is brought in which is a thyroidectomy I want to say just a few words concerning our conception of the determination of the surgical risk in these cases. We feel that a study of the metabolic rate and also of the reaction to Goetsch test enables us to form a much more comprehensive judgment concerning the amount of surgical interference that one can engage in. In other words the metabolic rate gives us an estima

tion of the degree of toxicity while the reaction of the patient to the Goetsch test gives us an estimation of the resistance of that patient to surgical insult. Again it is not enough to know merely the metabolic rate because then we know only the degree of toxicity but if we add to the knowledge of the metabolic rate a study of the reaction of the patient to a Goetsch test we know not only the degree of toxicity but we know also how much the patient had been injured by this toxicity and can form a judgment as to the amount of surgical trauma this patient can stand.

Stating the proposition in still another way we know given a case of hyperthyroidism any surgical interference will increase the degree of toxicity which if carried to a sufficient degree will result in an exhaustion of the vasomotor tone and this exhaustion of the vasomotor tone will result in death. If we had a means at our hand with which we can measure the distance from the point at which we find the patient to the point of vasomotor exhaustion we will have determined the width of the safety zone in the confines of which it is safe to play. If this zone be wide one can attempt more surgery and in a case with a narrow safety zone one cannot attempt very much. It is a measurement of this safety zone that we feel is accomplished by the means of the Goetsch. If following the injection of 6 to 8 mm. of adrenalin there is an immediate marked drop in the diastolic blood pressure and a slow return of the same to its former level we feel that that patient has already very nearly reached the point of exhaustion of vasomotor tone and we know from experience that that patient is a very poor surgical risk and will stand only the very slightest of surgical insult. This patient whom we have just seen is just such a case and if she is to be brought safely through to a cure she must have the benefit of the most painstaking care and study. And in spite of all this it will often strain one's best judgment to know when and how much to interfere.

TOXIC ADENOMA OF THYROID

THE second case represents the other type of thyroid toxicity namely the toxic adenoma seldom if ever producing exophthalmos, coming on in much older patients and patients who have had an irregular enlargement of the thyroid for many years. This patient Mrs. Ella M. aged fifty seven and a housewife was admitted to the hospital first some three months ago at which time she was very nervous had a pulse rate of 140 a metabolic rate of 147 and a very positive Goetsch and all of the symptoms that go with a marked thyrotoxicosis. Following a week's observation embracing all of the studies as detailed in the previous case we did at the first sitting a ligation of her right superior thyroid a week later a ligation of the left superior thyroid. She remained in the hospital a week or ten days following the last operation and then went to her home. During the two and a half months she has been away from the hospital she has been reporting to our office regularly at least once every two weeks at which time we have taken basal rate readings numerous Goetsch tests and we have been watching her very steady improvement. Four days ago she had a basal rate of 124 a Goetsch test which shows but a slight drop in a diastolic pressure with a quick recovery.

In the light of these studies we approach this case with a feeling of confidence. We feel quite sure that we will be able to remove all the thyroid gland we desire without undue haste and complete an adequate closure of the wound. Allow me to say here however that in order to do good surgical work in cases of hyperthyroidism one must have confidence in his anesthetist and must be willing to take advice from the anesthetist as to when to discontinue his operative procedure. We have sufficient confidence in our anesthetist that when he advises us that the patient's blood pressure is falling that the pulse rate is rising in other words that there are signs of approaching vasomotor exhaustion we accept his judgment and cease operat-

ing at once returning the patient to bed to be returned to the operating room in perhaps two days at which time the operation will be completed. We do not expect to have to cease our operating in the middle of the game today but we have done so numerous times and have always been glad we did because it is only when the surgeon does too much that he has occasion to regret his activities with these cases.

To complete the history of this case. She has had for thirty years an *irregular enlargement of her thyroid gland* which as far as she knew gave rise to no symptoms until about a year ago at which time she began to lose weight and was conscious of a rapidity and irregularity of her pulse tired easily on exertion and had occasional attacks of diarrhea. When she first came to the office she complained that she was just run down and had no thought that her symptoms were the result of her goiter for she had noticed no change in the goiter at all.

On physical examination she has the usual findings namely tremor tachycardia increased reflexes slight increase in blood pressure etc.

Laboratory Examination—Urine analysis negative

Blood examination Hemoglobin 80 per cent red cells 5 000 000 white cell 8600 with normal percentages Wassermann negative Goetsch test (a) Systolic Rises 15 points within first ten minutes begins to recede and has returned to starting point within forty minute (b) Diastolic Drops 8 points in the first ten minutes and has regained its former point within forty five minutes

Operation—We use the usual collar incision but a little higher than the level at which we formerly made our incision with the skin flaps retracted both upward and downward. Our muscle flaps are laid back on each side. This gives an adequate exposure of our thyroid. You will notice there is a large adenoma of the right lobe a somewhat smaller one involving the isthmus and the left lobe. In the removal of a thyroid considerable care is taken to have hemostats on all vessel before they are cut and avoid as much as possible traction on the thyroid for fear that by such traction we may injure the recurrent laryngeal

nerve by making traction thereon or by pinching it with a hemostat. With the adenomatous portion of the thyroid removed one proceeds to ligate each point before the hemostat is released.

Where one has done a previous ligation of the superior thyroid one expects some difficulty in freeing the upper pole of the gland. With all bleeding points ligated we proceed to the suturing of our muscle flaps.

We always use drainage in the cavity from which each lobe has been removed. This drainage is usually brought out through a stab wound just above the suprasternal notch. We close our wound with catgut suture material. A liberal dressing is now applied.

The anesthetist assures me that there has been but little increase in the pulse rate and the blood pressure has been well sustained throughout the operation. We feel quite certain that this patient will not show as much storm following this operation as she did following the ligation.

CHOLECYSTECTOMY FOLLOWING ACUTE RUPTURE OF GALL BLADDER WHICH OCCURRED TWO MONTHS AGO

Now our third case is again a second stage operation but this time a gall bladder instead of a goiter Mrs Hester I aged fifty two white a housewife the mother of 9 children

Early History —The usual children's diseases otherwise unimportant

Personal History —Menstruated first at the age of thirteen regular and normal married at the age of twenty the mother of 9 children the youngest now ten years of age

Present History —For past eight years has had repeated attacks of stomach trouble and more or less continuous indigestion No attacks of severe colicky pain until a few weeks ago when about 10 o'clock one forenoon she was seized suddenly with a very severe pain in the abdomen most severe in the upper right quadrant She was compelled to lie down at once and vomited within less than one hour from the onset of the pain Her family doctor was called who washed out her stomach had her given an enema each without relief He gave her $\frac{1}{4}$ grain of morphin by hypodermic with but slight relief and later in the afternoon repeated the hypodermic with but little benefit She was removed to the hospital that same evening where I examined her for the first time She had a rapid pulse also complained of considerable pain abdomen tender over entire extent and very rigid no gas distention her white count 16 600 red cells 6 000 000 She was diagnosed as an acute gall bladder with the beginning of general peritonitis Her condition was such that it was not deemed safe to give her a general anesthetic and she was removed to the operating room where the abdomen was opened under a local anesthetic

On opening the peritoneum which was opened through an upper right rectus incision there was an escape of quite a quantity of bile stained fluid This was really more than bile stained It

gave one the impression of being about one half bile and one half peritoneal fluid. On examining the gall bladder it had ruptured near the fundus on the under surface and had been draining into the peritoneal cavity. The gall bladder contained one large stone which was removed. A drainage tube introduced into the gall bladder and sutured there. A second wick tube into right flank beneath gall bladder. A third rather large cigarette drain to bottom of pelvis. Abdomen closed and patient returned to bed.

She was quite sick for a period of three days during which time there was a very free draining from the peritoneal cavity. She gradually improved and left the hospital on the nineteenth day following operation. She was told that it would probably be necessary for her to return to have the gall bladder removed. She re entered the hospital two days ago abdomen soft but still complaining of her indigestion.

Physical Examination—Her physical examination and her laboratory examination were both negative except for a few white blood cells in the urine. We expect at this time to remove the gall bladder.

Operation—We will reopen the right rectus upper abdominal incision. On opening the peritoneum we encounter at once numerous adhesions. The fundus of the gall bladder is easily identified and the entire gall bladder stripped free from its many adhesions rather easily. It has been our practice usually to remove the gall bladder from within out consequently we will first identify our cystic duct clamp it and ligate reasonably close to the common duct. After cutting the cystic duct between the hemostat and the ligature the cystic artery is easily ligated. With the cystic duct and artery cut the lower end of the gall bladder is free and one can easily strip it from its bed leaving enough of the serous coat on either side that it can be sutured across the bed formerly occupied by the gall bladder. We have never experienced any difficulty with a sharp knife separating this serous coat and unless the gall bladder is very much distended we never aspirate its contents for it has been our experience with gall bladder moderately distended one can

dissect it more readily from its bed. When the inner two-thirds to three-fourths has been dissected free we then begin to suture the serous coat across the bed of the gall bladder. Beginning at the stump of the cystic duct which is first buried then the free edges of the serous coat are drawn across with a running suture. With the gall bladder removed we will introduce a cigarette drain because of the presence in this field of a rather recent infection. We close the abdomen in layers about the drain.

We have liked to think in gall bladder surgery of the gall bladder itself being the seat of the disease and consequently it has been our practice to remove the gall bladder unless there is some particular reason for not removing it. With an acute gall bladder such as this was at the previous operation we would of course never consider a cholecystectomy. When Everts Graham published his article calling attention to the fact that in cases of cholecystitis one invariably had associated cholangitis he did much to clear up our thinking in the surgical pathology of this region.

It is to this fact to which Everts Graham has called our attention that many of our poor results can be attributed. I think all will agree that we have too many of these gall bladder cases continuing to have symptoms following the operation. It is my feeling that by giving more consideration to the associated cholangitis and hepatitis that one will increase his percentage of actual cures and it has been a question whether we should not adopt as a rule common duct drainage in all of our cases of cholecystitis. I am inclined to believe that it is the logical thing to do although we did not do it in this case. In the after treatment of these cases the internist should not be overlooked for he feels that he can do much by proper dietetic regulation and proper increasing of fluid intake toward establishing a free biliary drainage. If his contention is correct his program will help very materially in clearing up the cholangitis.

CLINIC OF DR. J. EDWARD BURNS

CHRISTIAN CHURCH HOSPITAL

CALCULI IN THE KIDNEY AND URETER DIAGNOSIS AND TREATMENT

The Cases Which Are To Be Presented Demonstrate Calculi in Different Portions of the Kidney and Ureter. The Methods of Diagnosing and Locating These Calculi in Their Different Positions. A Discussion as to Whether They Should Be Removed by Operation or Whether the Patient Should Be Allowed to Pass Them. The Different Types of Operation Employed in Their Removal.

CALCULI IN THE KIDNEY

Case I—G. S. M. male aged forty two farmer. Was first seen on January 21, 1920 at which time he complained of pain in the right side and passing blood and stones in the urine. The family history and past history were negative. Present illness began twenty years ago. At this time the patient began having cramps in his abdomen often accompanied by vomiting. These attacks would come on at intervals of from two to three months. Later on he went as long as eight years without an attack. The pain at first would appear on both sides but was especially severe on the right. The pain radiated into right groin and testicle. Three years ago the patient passed blood in the urine for the first time during one of these attacks of right sided pain. This was accompanied by burning and frequent urination and he passed two stones. Six months ago during another attack he passed a stone.

Physical Examination. Patient was a well nourished man, mucous membranes good color. Heart and lungs negative. Abdomen negative. External genitalia negative. Rectal exam

ination revealed a slight chronic prostatitis and seminal vesiculitis. Urine examination. Color yellow reaction acid specific gravity not obtained sugar negative albumin negative. On microscopic examination a few red blood cells were found.

Cystoscopic Examination—Residual urine none bladder capacity 240 c c. Cystoscope entered with ease. Study of the prostatic orifice showed no cleft anteriorly no intravesical enlargement of either lateral lobe of the prostate. Median portion

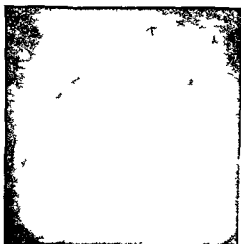


Fig 788—Plan R. The right kidney catheterized with the following results: The upper pole

of prostate was elevated above the trigone in the form of a slightly rounded median bar. Bladder wall showed much trabeculation and there was also slight injection of the vessels of the mucosa. Trigone was normal in appearance as were both ureteral orifices. No cellulæ diverticula or calculi present no tumors seen.

Ureteral Catheterization—A No. 6 catheter passed up to pelvis of both kidneys with ease. Urine from right kidney contained red blood cells epithelial cells no bacteria that from the left kidney showed red blood cells ++ epithelial cells no bacteria. Six mg of phthalein were given intravenously. Appear

ance time on the right side seven minutes and on the left side six minutes. In one half hour 15¹ per cent was secreted by the right kidney and 15 per cent by the left. 15 per cent thorium solution was then allowed to flow into the pelvis of either kidney and ureter by gravity and pyelograms made. Plain Roentgen rays of both kidneys were entirely negative except for a shadow in the upper pole of right kidney (Fig 788). Pyelograms showed bilateral enlargement of both pelves. The shadow seen previously in the plain Roentgen ray seemed apparently to lie in the region of the upper median minor calix on the right side (Fig 789).

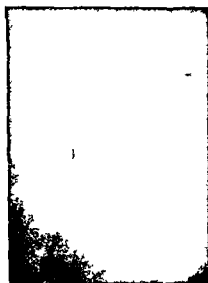


Fig 789—Right pyelogram Case I showing dilated pelvis and calices shadow of calculus in upper median minor calix

Impression Nephrolithiasis right

Reasons for Operation—Stone seemed rather large to be passed spontaneously and the patient was having more or less continuous pain. If the stone had been smaller it might have been well to wait and allow the patient to pass it in view of the fact that the urine was not infected. The condition had been present such a long time it was feared infection might occur at any time.

Operation—Nephrolithotomy right. After making a semi-lunar incision extending from above and behind the tip of the

twelfth rib around the costal margin for a distance of about 15 cm and dividing the fat and fascia and muscles by sharp dissection the lumbar triangle was exposed and pierced by a blunt clamp. The opening was then enlarged and the kidney exposed with

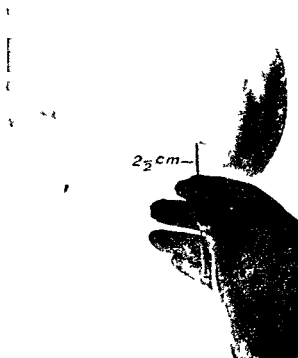


Fig. 90—Showing the position of the kidney in the lumbar triangle. The distance of 2 1/2 cm. is indicated between the costal margin and the kidney.

difficulty owing to the numerous adhesions which had to be ligated and divided. The kidney was normal in appearance and consistency and was delivered into the wound with difficulty owing to the shortness of the pedicle. The stone was then located by measuring on the plain Roentgen ray plate the distance of

the shadow from the upper pole and also from the convex border. A probe was then inserted perpendicularly through the cortex at the intersection of these two lines. This opening was enlarged by a clamp and the stone removed.

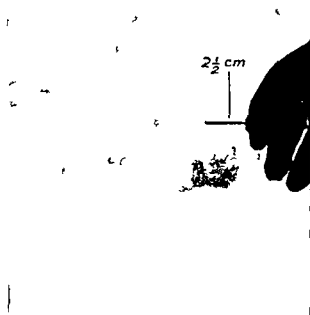


Fig. 791—Showing measurement of distance of shadow of calculus from convex border of kidney.

This method of locating stones through the cortex has been previously described¹ and found to be extremely useful where stones cannot be palpated (Figs. 790-793).

It has been found experimentally much better to tear the cortex of the kidney with a blunt instrument such as a clamp rather than cut it with a knife because there is less bleeding and less scar tissue formation in healing.

The stone removed was dark gray in color and measured about $1 \times 1^1 \times 1$ cm. It had a smooth surface and was very hard.

The nephrotomy wound was closed by a mattress suture of chromic gut, care being taken not to tie this suture too tightly so as not to cause destruction of renal parenchyma. The kidney



Fig. 792—Shows method of applying mattress suture to kidney for nephrotomy. The figure shows the kidney with the incision site and the application of the mattress suture.

was then returned to its bed. A rubber tube drain passed down to the nephrotomy wound, one cigarette drain to the upper pole of the kidney and another down behind the kidney. The wound was closed in layers and the usual dressings applied. The patient left the table in good condition. The cigarette drains were removed in thirty-six hours and the rubber tube in ten

days The patient's convalescence was uneventful He was discharged from the hospital in three weeks

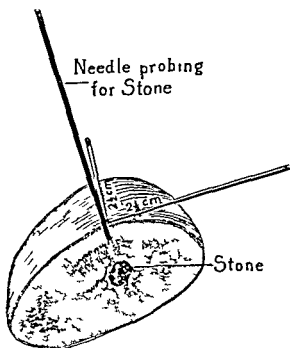


Fig 793 —Showing method of probing for calculus

Case II—F B L male aged thirty eight farmer Com-
 plained of pain in right side which radiated to the right groin and
 testicle He also had pain in the bladder and frequency of
 urination Family history and past history were negative
 Present illness began twenty years ago At that time patient
 first noticed burning and pain on urination he did not pass any
 blood This pain radiated from the bladder to the end of the
 penis and had gradually gotten worse There was also marked
 frequency and urgency of urination The patient was given
 bladder irrigations of boric solution which seemed to increase
 the pain Two years later the patient said the pain in the right
 side began which radiated to the right testicle at times Patient
 said there had been some blood in his urine ever since the bladder
 irrigations At first the pain in the right side would come on at
 intervals of one month or six weeks but the pain had gradually
 increased in severity and the intervals had become shorter

For the past year the pain had been constant. At times the patient said he could hold his urine as long as from one to two hours but there were intervals when he found it necessary to void every few minutes. For the past three weeks the burning on urination had been very severe and the urine was very cloudy. On standing it became jelly like in consistency. The patient had been given morphin for the past eighteen years. Lately the pain in the bladder and the urgency and frequency of urination had been much more marked while the pain in the region of the kidney was not so severe.

Physical Examination —Patient was a poorly nourished man mucous membranes pale. Heart and lungs negative. Abdomen flat neither kidney palpable in the upright posture. No masses made out. There was tenderness beginning in the left flank near the mammillary line and extending well around to the back. There was also tenderness at the right costovertebral angle and in the right lumbar region and suprapubically on deep palpation. External genitalia negative.

Urine Examination —Color yellow cloudy reaction neutral specific gravity not obtained sugar negative albumin 3+ microscopic examination white blood cells ++ red blood cells bacilli and cocci. Total phthalein output was 40 per cent for the first hour and 10 per cent for the second hour.

Cystoscopic Examination —Patient's bladder was so extremely irritable that this had to be done under gas anesthesia. Residual urine and bladder capacity not obtained. Cystoscope entered with ease. Study of prostatic orifice showed no cleft anteriorly no intravesical enlargement of either lateral lobe of the prostate no elevation of the median portion of the prostate above the trigone. Trigone was reddened and edematous both ureteral ridges were hypertrophied. Left ureteral orifice was normal in appearance. Right ureteral orifice was reddened and edematous and on being watched very cloudy urine was seen coming from it. Bladder wall throughout was fairly normal in appearance. No cellulæ diverticula or calculi present no tumors seen.

Ureteral Catheterization —A No. 6 catheter passed to pelvis of left kidney with ease. Attempts to pass a catheter up the right

ureter were unsuccessful. Urine from left kidney showed a few red blood cells epithelial cells no bacteria. Six mg of phthalein given intravenously appearance time on the left side six minutes and in a half hour 35 per cent was excreted by this kidney. Transve ically at the end of a half hour only a trace was found. Plain Roentgen ray of kidneys showed no shadow in the region of either kidney nor of either ureter. Roentgen ray of bladder showed no shadow in the region of the lower end of either ureter nor in the region of the bladder.

Impression. Pyonephrosis right. A nephrectomy was advised on account of the right kidney being badly infected and functionless.

Operation.—Right nephrectomy. A similar incision was made to that described previously and the kidney exposed without difficulty. There were some adhesions at the lower pole which were ligated and divided. The kidney was then delivered into the wound. It seemed larger than normal very soft and muhy in consistencv and pale in color. In the pelvis could be felt a mass which was harder than the adjacent tissues. The ureter below was thick and fibrous. The ureter was caught between clamp and divided as low down as possible both stump being cauterized with carbolic acid. The pedicle was then clamped with three clamps and after being ligated with two ligatures of No 3 chromic gut was divided. A rubber tube was placed down to the stump of the ureter and one cigarette drain to the cavity occupied by the kidney. The wound was closed in layers and the patient left the table in good condition.

Pathologic Report.—On section of the kidney the pelvis was found to be greatly dilated and there was a stricture at the ureteropelvic juncture. Above this point there was a stone measuring $2 \times 1 \times 1\frac{1}{2}$ cc. Stone was grayish in color soft and of a rough mulberry type. The renal calices and pelvis were greatly dilated and full of flakes of pus and mucus. Mucous membrane was very much reddened and thickened and the calices were moth eaten in appearance. Cortex was greatly thinned out and showed a well marked pyelonephritis. On microscopic exam

ination the renal parenchyma showed varying grades of pyelonephritis. The pelvic epithelium was greatly thickened and showed marked inflammatory reaction. The patient made an uneventful convalescence and the wound healed *per primam* except at the point of emergence of drains which healed by granulation. The two cigarette drains were removed in thirty six hours and the rubber tube in ten days. Patient was discharged from the hospital in three weeks having no urinary symptoms whatever and the urine being practically clear. The patient gained in weight markedly during his convalescence. In this case the stone was not shown on plain Roentgen ray examination as is true in about 15 per cent of the cases of renal and ureteral stones. The opacity of a calculus to the Roentgen ray is almost entirely due to its calcium content. Although in this case the stone was in the pelvis it was impossible to catheterize the right ureter hence a wax tipped catheter could not be passed to obtain a scratch. In this case pyelograms were not made for the reason that only the left kidney could be catheterized and in such cases it is not desirable to take a chance of stirring up any reaction in the only good kidney. This case was also one where the stone was associated with stricture in the upper ureter.

Case III—W J McC aged twenty eight lineman for electric company. Complaint incontinence of urine. Family and past history negative. Present illness. Fourteen months ago the patient was working on an electric pole when he received a shock from the wires and fell fracturing his spine. Since that time the patient had been catheterized constantly because of urinary retention and had incontinence of urine when he was not catheterized. Patient stated he had never been able to void since the accident. This patient was referred to me from the Orthopedic Service of Doctor Frank D Dickson who performed a laminectomy of the tenth and eleventh dorsal vertebræ and did a Stoffel operation on both obturator nerves for spasticity.

Physical Examination—Patient was a rather poorly nourished man mucous membranes pale. Heart and lungs negative.

Abdomen negative except for anesthesia of skin. This anesthesia extended over the whole lower trunk and extremities. There was also spastic paralysis of lower extremities. External genitalia negative. Rectal examination. Anal sphincter poor tone, otherwise negative. Urine examination. Color yellow. reaction alkaline. specific gravity 1010. sugar negative. albumin faint trace. Microscopic examination. white blood cells + bacilli and cocci.

Impression. Bladder paralysis due to spinal cord injury.

Treatment—A retention catheter was placed in the bladder and the patient was given daily bladder irrigations of 1-15 000 AgNO₃, the retention catheter being changed every third day. The total phthalein output was 50 per cent. for the first hour and 20 per cent. for the second hour. In about a month the patient developed an epididymitis (right) and catheterization was done at intervals for a while. After the epididymitis subsided the retention catheter was replaced and previous treatment resumed.

The numerous attempts to make the urine acid were unsuccessful owing to the fact that every time acid sodium phosphate or urotropin were given for any length of time the patient developed marked gastro-intestinal symptoms and his general condition did not seem to justify a continuance of the remedies. In about a year he passed a small calculus on withdrawal of the retention catheter. Shortly after that the patient developed pain in the left side of the abdomen. this was dull and aching in character. came on at intervals and was accompanied at times by nausea and vomiting. The pain did not radiate probably due to the paralysis.

Cystoscopic examination at this time showed a bladder capacity of 450 c.c. Study of the prostatic orifice showed no cleft anteriorly. no intravesical enlargement of either lateral lobe of the prostate. Median portion of prostate was elevated above the trigone in the form of a rounded median bar which was probably relative owing to the bladder paralysis. The trigone was reddened and edematous as was the left ureteral orifice. Right ureteral orifice was normal in appearance. The bladder

wall throughout showed a mild grade of cystitis and was trabeculated. No diverticula nor calculi present. no tumors seen.

Ureteral Catheterization—A No. 6 catheter was passed to the pelvis of both kidneys with ease. Urine from right kidney showed epithelial cells and a few bacilli. Urine from left kidney showed white blood cells, few epithelial cells and numerous bacilli. Six mg. of phthalein were given intravenously. Appearance time was three and a half minutes on both sides. In a half



Fig. 794.—Plain Roentgen ray of left kidney. Case III. In which had white calculus in pelvis. Catheter was inserted.

hour 25 per cent was secreted by the right kidney and 10 per cent by the left kidney. 15 per cent thorium was then allowed to flow into the pelvis of either kidney by gravity and pyelograms were made.

Plain Roentgen ray of kidneys showed a shadow in the region of the pelvis of the left kidney, triangular in shape, measuring about 5 x 6 cc (Fig. 794). The catheter passed over the shadow. No other shadows were seen in the region of either kidney nor of either ureter. Roentgen ray of bladder showed no

shadows in the region of bladder nor the lower end of either ureter. Pyelograms. The left pelvis was apparently completely filled by the stone. Calices were normal. Right pyelogram showed normal pelvis and calices and there was a normal ureteropelvic juncture on both sides (Fig. 195).

Operation—Left pyelolithotomy. The usual kidney incision was made and the kidney delivered into the wound with difficulty owing to the numerous adhesions at both poles which were ligated and divided. The posterior surface of the renal pelvis



Fig. 795—Double pyelogram. Case III.

was then exposed and incision made in it about 3 cm. in length. A calculus was removed being the exact shape and mold of the pelvis and calices and measuring about 5 x 6 x 4¹ cm. The stone was roughened on the surface, was very hard and brownish yellow in color. Ureteral catheter was then passed down to the bladder meeting with no obstruction. The renal pelvis was irrigated with normal salt solution and explored with the finger. The incision in the pelvis was closed with interrupted sutures of fine catgut and the kidney returned to its position.

One rubber tube was placed down to the line of sutures in the pelvis and one cigarette drain was placed in the neighborhood of either pole of the kidney. The wall was then closed in layers and the patient left the table in good condition. Postoperative treatment. The patient was given 1500 c c of salt solution subcutaneously on return to the ward. The cigarette drains were removed in thirty six hours. On the second day after operation the patient had a temperature as high as 102.4 F and a chill. He was given another 1500 c c of saline solution subcutaneously and temperature gradually came down to normal. Rubber tube was removed on the tenth day. Wound healed *per primam* except at point of emergence of tube and drains and the patient's general condition improved very markedly after the operation. The patient was discharged from the hospital in about two months still using his retention catheter.

This case is reported for various reasons. In the first place after bladder paralysis if the patient is catheterized he is usually infected and catheterization has to be kept up. With an alkaline urine stones very frequently form in the presence of infection and these cases should be Roentgen rayed rather frequently with this fact in view. The patient has recently been able to tolerate acid sodium phosphate and the urine has been made acid with the hope of avoiding the formation of other stones. The stone in the pelvis of the left kidney had to be removed even though the other kidney was infected for fear of complete destruction of the left kidney. Stones of this type are best removed through the pelvis and not by means of a nephrotomy for in these patients it is very essential to do as little harm to the renal parenchyma as possible.

Case IV—Mrs R. C. L. aged twenty housewife. Complaint pain in right side of back and passing blood in the urine. Family history and past history negative except that the patient had pneumonia four years ago. The present illness began in October 1922. At that time the patient had pain in the back on the right side for about two days and passed blood in the urine. This pain did not radiate to the groin. In January the patient

had two other attacks of pain in right side of the back and passed blood in the urine. Patient described the pain as being dull and aching in character and being relieved by lying down. The patient said the pain was worse toward evening and after exercise and not accompanied by any urinary symptoms except the passing of blood.

Physical Examination—Patient was a well nourished young woman mucous membranes good color. Heart and lungs negative. Abdomen negative. Vaginal examination negative. Urine examination. Color pale yellow reaction alkaline specific gravity 1022 sugar negative albumin negative. Microscopically red blood cells + white blood cells few no bacteria.

Cystoscopic Examination—Cystoscope entered with ease. Study of vesical orifice showed no abnormality. Trigone was slightly reddened ureteral orifices normal in appearance. Bladder mucous membrane normal. No cellulæ diverticula or calculi present no tumors seen.

Ureteral Catheterization—A No. 6 catheter was passed to pelvis of right kidney with ease. It was impossible to pass a larger catheter than a No. 5 up the left ureter. Urine from the right kidney red blood cells epithelial cells no bacteria. Urine from the left kidney white blood cells occasional epithelial cells red blood cells + no bacteria. Six mg. of phthalein were given intravenously. Appearance time on the right side seven and a half minutes and on the left side six minutes. In a half hour 25 per cent was secreted by the right kidney and 30 per cent by the left. 15 per cent thorium solution was then allowed to flow into pelvis of either kidney by gravity and pyelograms made. Plain Roentgen ray examination showed that outlines of both kidneys could be distinctly made out. In the right kidney just above the ureteropelvic juncture there was the shadow of a small stone which measured about $1\frac{1}{2} \times 1$ c.c. (Fig. 796). No shadows were seen in the region of the bladder nor the lower end of either ureter. Pyelograms. On the left side there was a small normal pelvis with normal calices. In the right side the pelvis was somewhat dilated showing beginning hydronephrosis calices were also beginning to be blunted (Fig. 797).

Impression Nephrolithiasis right Reasons for operation were the fact that the stone was too large to be passed the beginning of hydronephrosis and the pain in the back was becoming rather constant causing a great deal of discomfort

Operation—Pyelolithotomy right The usual kidney incision as described above was made The lumbar fascia was pierced by a clamp and the perirenal fat exposed The kidney was exposed without difficulty and delivered into the wound



Fig 796—Pl. Roe tg ay C IV l g t a g lar h d w f cal
h wh h bo t p of the r t al cath t th ght d

The stone could be readily felt in the pelvis of the kidney An incision about $1\frac{1}{2}$ c c in length was made in the renal pelvis and a small calculus measuring about $1 \times 2 \times \frac{3}{4}$ c c was removed The calculus was roughly triangular in shape covered with papules mulberry formation and brownish in color A catheter was then passed down to bladder and finger introduced into pelvis of kidney for exploration but no other stones were found The wound in the renal pelvis was closed by interrupted sutures

of fine plain catgut a rubber tube placed down to the line of suture and the kidney returned to its bed. One cigarette drain was placed down by the side of the rubber tube and another to the lower pole of the kidney. The wound was closed by through and through sutures of silver wire and the skin by a continuous suture of fine black silk. The patient left the table in good condition. The patient's convalescence was uneventful. The two cigarette drains were removed in forty eight hours the rubber



Fig. 797—Double cystogram. Case IV showing dilatation of pelvis and calices.

tube removed in ten days. There was no urinary drainage. The patient left the hospital in three weeks the wound having healed *per primam* except at the point of emergence of tubes and drains. The urine examination was negative on discharge from the hospital.

URETERAL CALCULI

Case V—F. J. I., male, aged twenty-six, manager of a grain elevator. This patient was first seen on October 12, 1920, when he complained of pain in right side and passing blood in the

urine Family history and past history were negative Present illness began four years ago at which time patient had pain in his back on the right side which did not radiate and passed blood in his urine This attack lasted only a few days He had a slight pain in his back at times until September 1918 when he had two severe attacks of pain in the right side which radiated to the right groin and testicle There was no retraction of the testicle and there was no blood in the urine at that time The pain was so severe that the patient had to have morphin for its relief The attack was accompanied by frequency of urination and there was also burning on urination at times In October 1919 the patient had another attack Since this time he has had two similar ones and at the time of the last attack the patient was operated upon for appendicitis Each of these attacks was accompanied by nausea and vomiting The patient did not have chills and fever In August the patient had another attack the pain being the most severe he had had He had passed no blood since the first attack and had never passed any stones For the past month he had found it necessary to get up once a night to urinate There were no other urinary symptoms

Physical Examination—Patient was a well nourished young man mucous membranes good color Heart and lungs negative Abdomen negative except for a scar at the site of appendectomy External genitalia negative Rectal examination revealed a slight chronic prostatitis and seminal vesiculitis Urine examination Color pale yellow reaction acid specific gravity 1072 sugar negative albumin negative Microscopically occasional red blood cell no bacteria Prostatic secretion white blood cells 5 per cent spermatozoa 0 leucin + compound granular few corpora amylacea 0 epithelial cells few Total phthalin test First hour 45 per cent second hour 70 per cent

Cystoscopic Examination—Residual urine 0 Bladder capacity 110 c c Cystoscope entered with ease Study of the prostatic orifice showed no cleft anteriorly no intravesical enlargement of either lateral lobe of the prostate no elevation of median portion of prostate above the trigone Trigone was somewhat

edematous both ureteral orifices were edematous, particularly the right which was crater like in appearance. The bladder wall showed a moderate grade of cystitis. No cellulæ diverticula, nor calculi present. no tumors seen.

Ureteral Catheterization—A No. 7 catheter passed to pelvis of left kidney but on the right side it could be passed for only



Fig. 798—Double pyelogram Case V showing shadow of calculus on the right side which is below the transverse process of the fifth lumbar vertebra. also dilatation of the right ureter.

half the distance. Urine from right kidney showed an occasional white blood cell, red blood cells + occasional bacillus. Urine from the left side showed red blood cells +++ no bacteria, epithelial cells. Six mg of phthalein were given intravenously. The appearance time on the right side was five minutes and on the left side six minutes. In a half hour 23 per cent was secreted by right kidney and 30 per cent by the left kidney. Wax

tipped catheter passed up right ureter met with obstruction about half way up and on withdrawal showed a definite scratch. Pyelograms Outline of pelvis of left kidney was entirely normal no shadows seen in the region of this kidney or ureter. Outline of pelvis of right kidney showed slight blunting of the calices and dilatation of pelvis and ureter down to the transverse process of the fifth lumbar vertebra. At this point there was the shadow of a stone (Fig 798). No shadows were seen in the region of the bladder nor in the lower end of either ureter.

Impression Calculus in left ureter at the level of the transverse process of the fifth lumbar vertebra. Reasons for operation were that the stone was too large to be passed, that infection was present and that there was beginning hydronephrosis and hydro ureter.

Operation—Ureterolithotomy, right. The patient was placed on laparotomy table, cleaned up in the usual manner and incision made beginning above and to the outer side of the antero-superior spine of the ileum and extending parallel to Poupart's ligament to about its middle. An exaggerated McBurney incision was made and the peritoneum was pushed toward the midline, the ureter being readily exposed. A catheter having been introduced into it before the operation was begun. The ureter was found to be greatly thickened, measuring about $1\frac{1}{2}$ cm in diameter. It was delivered into the wound and the calculus readily palpated. Incision was made over it and a roughened mulberry calculus, dark brown in color, removed, measuring $1 \times 1\frac{1}{2}$ cm. A wax-tipped catheter was then passed up to the pelvis of the kidney and no scratch obtained. There were no stones below as the catheter had never met any obstruction in passing until the time the calculus removed was encountered. The wall of the ureter was united by three interrupted sutures of plain catgut. A rubber tube and cigarette drain were placed down to the incision. Abdominal wall was closed in the usual manner in layers, usual dressings applied and patient left the table in good condition.

The patient's convalescence was uneventful. The cigarette drain was removed in thirty-six hours, the rubber tube in ten

days There was no urinary drainage On discharge from the hospital wound had healed *per primam* except at the point of emergence of tube and drain and this had granulated well No areas of induration nor tenderness in the scar The patient could hold his urine as long as five hours There was no dysuria Urine voided in three glasses glasses one two and three clear Urine examination was negative except for the presence of an occasional red blood cell

Case VI—Mrs O G aged thirty nine housewife Patient was first seen August 1 1921 complaining of pain in the left side Family history and past history were negative except for the fact that in March 1908 the patient had had a pelvic abscess which was opened and drained through the cul de sac This was again opened and drained in June 1908

Present illness began five years ago since which time patient had had what she called lumbago On June 1st the patient went to bed with a nervous breakdown and for about three weeks had a severe pain in the left side and back which radiated to the groin Pain was relieved by morphin and was accompanied by nausea and vomiting and abdominal pain On July 2d patient had a severe chill and elevation of temperature Three days later patient had another chill and elevation of temperature Patient had had two attacks of pain since the first which were similar in character She had had an elevation of temperature about once a week After an attack of pain patient had some frequency of urination and burning on urination She had the last attack of pain about ten days before since which time her temperature had gradually come down to normal

Physical Examination—Patient was a well nourished somewhat anemic looking woman mucous membranes fair color Heart and lungs negative Blood pressure 110 over 90 Abdomen negative Vaginal examination Patient had some relaxation of vaginal outlet there was a slight leukorrheal discharge present Vaginal orifice readily admitted two fingers there was no tenderness in the lateral fornices Uterus was anteverted but

structure After the shadow is seen the next important thing is to determine whether it lies outside or within the urinary tract. The shadows outside the urinary tract most commonly confused with those of calculi are the shadows of phleboliths in the pelvis and also those due to intestinal contents. The use of opaque ureteral catheters, shifting of the Roentgen ray tube and making double exposure on the same plate as advised by Kretschner and the making of pyelograms and ureterograms are the means we have to demonstrate whether or not the shadow lies within the urinary tract. Another most important aid is the use of the wax tipped catheter. When a definite scratch is obtained on this it is proof positive evidence that the stone lies within the ureter or pelvis of the kidney. The shadows of calculi which are not seen in the plain roentgenogram are often brought out very distinctly in the pyelogram or ureterogram. These shadows are generally seen then because the medium used in making the pyelogram or ureterogram is more opaque to the Roentgen ray than is the calculus itself. Hence the outline is made out as a less opaque area. This has been found to be true in the use of thorium solution as a pyelographic medium. Pyelograms are also useful in showing the amount of damage being done to the kidney and ureter by the degree of dilatation of the renal pelvis and the ureter. In the case of ureteral stones the dilatation of the ureter down to the point of obstruction often definitely locates the position of the stone. The pyelogram also shows whether the calculus lies in the pelvis, calices or in the renal cortex. Great care should be used in making pyelograms. For instance in Case II it had been demonstrated that the infected kidney was useless and it was therefore thought unnecessary to take a chance of stirring up a reaction in the good kidney by making double pyelograms. Whenever there is any doubt about the draining off of the pyelographic medium from the pelvis of the kidney the catheter should always be left in place until it is felt that this has been accomplished. If both kidneys are badly infected and there is marked diminution in the phthalein output on both sides a pyelogram should only be attempted on one side at a time.² Ordinarily there is very little if any reaction in making pyelograms.

if care is used in the selection of pyelographic medium and if the condition of the kidneys determined previously is found to be good Thorium solution has been in constant use at the Brady Urological Institute of the Johns Hopkins Hospital ever since its introduction in 1915.³ There have been practically no untoward effects from its use.^{4 5 6} The solutions of the iodids introduced by Cameron⁶ for this purpose are also very excellent. In making pyelograms the solution should always be allowed to flow into the renal pelvis and ureter by gravity and not forced in by means of a syringe for it has been shown experimentally that it is impossible to determine by the sense of touch how much pressure is necessary to fill the renal pelvis and avoid forcing the solution out into the renal parenchyma.

TREATMENT

After a positive diagnosis of calculus in the upper urinary tract has been made the question arises as to whether the patient should be allowed to pass the stone or whether there should be immediate operative interference for its removal. A fairly large number of these calculi will be passed either spontaneously or after treatment and lately there has been a great trend toward conservatism in the treatment of these cases. If the calculus is small enough to pass and the kidney function on the affected side is good and no infection is present non operative treatment should be invariably employed.

Stones too large to be passed should always be removed as soon as possible because of the possibility of the damage they may cause especially is this true where the stone is found in an only remaining kidney. If however infection is present the stone should be removed as soon as possible no matter what its size because of the possibility of ascending infection and a consequent suppurative pyelonephritis which if allowed to go on may necessitate a nephrectomy. For this reason the presence of infection and the size of the stone are the most important factors in determining whether the case should receive operative or non operative treatment.

Non operative Treatment—Often after a simple ureteral

catheterization the patient is entirely relieved of the pain because of the fact that the stone is so turned around as to allow drainage of the urine past it

CASE VIII

Sometimes after this procedure the calculus is passed almost immediately. Sometimes the injection of oil or the use of various agents to relax the muscular coat of the ureter will aid in the passage of the stone. If the stone lies in the intramural portion of the ureter or can be seen projecting into the bladder through the ureteral orifice fulguration of the orifice as demonstrated in the 2 cases quoted above is most effective for widening the orifice and allowing the passage of the stone (Cases VII and VIII). In such cases the orifice may also be dilated by means of a Carreau catheter or by a special dilator devised by Bransford Lewis and sometimes the stone may be grasped by forceps and withdrawn from the orifice. Ureteral strictures when associated with stones should always be dilated so as to prevent the formation of further stones.

Operative Treatment—The type of operative procedure to be decided upon depends upon the size and location of the stone and the amount of impairment to the kidney already present. In Case I although the calculus lay in one of the minor calices and might have been removed through an incision in the pelvis it was decided to locate it by the method described above and remove it through the cortex. If it had been removed through an incision in the pelvis damage would have been done to this portion of the kidney due to manipulation on account of the location of the calculus whereas it was removed through a rather small nephrotomy wound. Should the calculus be large filling the entire pelvis and calices it is sometimes necessary to remove it by doing a nephrotomy. However this is to be avoided if possible and the calculus removed through a pyelotomy wound because in the first procedure there is always more or less permanent damage to the renal parenchyma. If as in the case of the calculus just described or in the case of numerous small calculi with a badly infected kidney which has very poor function or is functionless a nephrectomy should be done (Fig 799)

If the kidney destruction has gone beyond the point where recovery is possible and if the calculus alone be removed a nephrectomy may be necessary later. Therefore it is better to save the patient the second operation which is always very difficult and dangerous. Calculi in the pelvis should as a rule be removed through a pyelotomy wound as in Cases III and IV. An important procedure in these cases is to place drainage down to

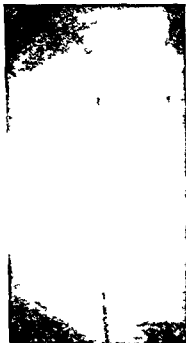


Fig. 799—Plain Roentgen ray showing large calculus occupying the entire pelvis and extending into the calices. Urine from this kidney was badly infected the phthalein output greatly diminished. Such a case would probably require a nephrectomy.

the line of sutures in the pelvis. These drains should always be left in place as long as there is any urinary drainage to prevent the possibility of the formation of a perinephritic abscess from extravasating urine. After the calculus has been removed the pelvis of the kidney should always be explored with the examining finger to see that no pieces are left. It is also very important to pass a wax tipped catheter down to the bladder to see that there are no remaining stones in the ureter.

In the case of ureteral calculi the type of operation decided upon depends upon the location of the calculus in the ureter. If it lies in the upper third of the ureter the incision should be the same as for the exposure of the kidney while if it is in the middle or lower thirds of the ureter an exaggerated McBurney incision carried well out toward the anterosuperior spine of the ileum and parallel to Poupart's ligament will generally suffice for the proper exposure of the ureter. Before any operation for a stone in the ureter is undertaken it is always well to have an immediate Roentgen ray examination to be sure that the calculus has not been passed and also to be sure that it is in the same location as at the last examination and has not slipped back up into the pelvis of the kidney as sometimes occurs. A very good procedure to avoid delay in finding the ureter is to introduce a ureteral catheter into it before the operation is begun. Thus when the peritoneum is pushed toward the midline with the ureter adhering to its posterior surface the latter can be readily palpated on account of the presence of the catheter within it. After the calculus has been removed from the ureter the ureterotomy wound should be sutured together by interrupted sutures and a drainage tube placed down to the line of suture. Here as in the case of the kidney the drainage should be left in place as long as there is any urinary drainage and it is usually a safe rule to leave these drains in place for at least ten days after the operation whether any urinary drainage is present or not.

SUMMARY

In cases of indefinite abdominal pain a thorough urologic examination should always be made for in this way many patients will be saved from unnecessary operations.

Conservatism and the use of non operative treatment are always to be urged where the stone is small enough to be passed and no infection is present.

The size of the stone and the presence of infection are the deciding factors in determining whether operative or non operative treatment is to be used.

The type of operation performed should always be determined

by the size and location of the stone and the amount of infection present and it should be done with a view of causing the least possible damage to the kidney or ureter

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CLINIC OF DRS FRANK D DICKSON AND
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CHRISTIAN CHURCH HO PITAL

INJURIES TO PERIPHERAL NERVES ASSOCIATED WITH
FRACTURES

WE wish first to present 4 cases which illustrate the injuries which may occur to peripheral nerves in conjunction with fractures. Industrial and war surgery have very clearly demonstrated that wherever severe trauma to a part occurs the possibility of injury to peripheral nerves must be considered. This is particularly true in fractures of the extremities.

Case I—W W aged five years August 31 1922 patient fell on his right arm sustaining a supracondylar fracture of the right humerus. Almost at once the region of the elbow became swollen and black this swelling and discoloration extending downward to the wrist. The arm was put up in the Jones position and plaster applied. Within three or four days acute flexion of the fingers was noticed and attempts to straighten them caused great pain. The cast was removed in three weeks at which time the fingers thumb and wrist were acutely flexed and great pain was still complained of when attempts were made to straighten them. The patient also complained of numbness in all the fingers and there was a large slough in the cubital space. The extreme pain on attempt to straighten the fingers and wrist persisted for about a week or ten days after which time although the thumb fingers and wrist remained acutely flexed no particular pain was noted when attempts were made to straighten them.

The patient on October 11 1922 six weeks after injury presented the following. General examination of patient negative. Examination of right arm. The musculature of the arm

showed a moderate amount and the forearm a marked degree of atrophy. A scar of an old slough was noted in the cubital space. The elbow was held in right angle flexion and had about 15 degrees of motion. There was a large callous formation which could be palpated about the lower end of the humerus and the internal condyle was unduly prominent (Fig. 800).

The wrist, thumb and fingers were strongly flexed and could not be extended to any extent even when considerable force was used (Fig. 801). This seemed to be due to the contractions of the flexor tendons rather than to a paralysis of the extensors. The palm of the hand was scaly and the end of the index finger slightly atrophied. There was some atrophy of the thenar eminence. Nails showed no marked changes. Sensation was de-



Fig. 801—Th h d
nd m bef ope t
N t th fle t c
t d th l k f

pressed on the entire median and ulnar distribution to pin pricks and to heat and cold from the middle of the forearm down. The diminished sensation was distinctly less marked over the little and ulnar side of the ring finger which is the terminal sensory distribution of the ulnar nerve. (Age and temperament of patient made it difficult to determine the exact degree of sensory interference.)

The Wassermann blood and urine tests were negative.

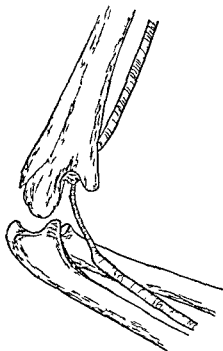


Fig. 807.—A diagram of the elbow drawn at the time of the operation. Note the diminished size of the median nerve.

The nature of the injury together with the contracted flexor tendons and the interference with sensation chiefly involving the median nerve distribution clearly indicated an injury to the median nerve of an irritative type rather than a division with the possibility of some involvement of the ulnar nerve. Since this condition had existed for six weeks without any improvement and with the gradually increasing deformity an exploration of the median and ulnar nerves was indicated.

Operation was performed on October 18, 1922. The median

nerve was exposed by a 4-inch incision along the inner margin of the biceps tendon. The nerve was found to be hooked around the distal end of the proximal fragment of the humerus and was embedded in dense scar tissue (Fig. 802).

The nerve was dissected free and was found to be hard sclerotic and very much decreased in size for an extent of 4 inches. A neurolysis was done and the nerve transplanted into a groove which was made in the biceps muscle. The ulnar nerve was then explored but showed no gross evidence of injury. The bellies of the flexor muscles of the forearm which were exposed by the incision showed distinct fibrous degeneration. The incision was then closed by layers. The flexor tendons were still contracted under the anesthetic. The wrist, fingers and thumb were forcibly straightened and a palmar plaster splint was applied to hold them in the corrected position.

Within a few days following the operation there was an improvement in sensation in all fingers except the index. The power of flexion and extension gradually returned and by December 9th the patient had fairly good control of the hand.

The splint was worn constantly for two months, being changed from time to time into more dorsal flexion as the flexor tendons relaxed. The splint was removed several times each day for massage and exercise; it is still being worn at night. As you see the patient now he has practically normal movement of the hand with the exception of the index finger and this is improving. The sensations are normal except the index finger where it is definitely depressed (Figs. 803-804).

In this case the nerve was injured through becoming caught by the proximal fragment at the time of injury. In this position the pressure on the nerve by the bone caused primarily irritation of the nerve with the contraction of the muscles supplied by it giving the flexion deformity. At this time an attempt to extend the fingers was very painful. Later degeneration of the nerve occurred and interference with its conductivity causing a loss of power in the contracted flexor muscles and interference with sensation. At this time attempt to straighten the fingers did not cause pain. There could be no possibility of recovery in this



Fig 803—Motion pictures of the patient after operation showing the flexion and extension at the wrist



Fig 804—Motion pictures of the patient after operation showing the flexion and extension of the fingers and hand

case unless the nerve had been freed. The relief of pressure on the nerve by removing it from its abnormal position and by doing a neurolysis allowed the nerve fibers to regenerate and the conductivity to be restored. The failure of the index finger to keep pace with the rest of the hand in recovery seemed to be due to a more severe degree of injury to the fibers supplying this member.

The stretching of the contracted tendons by the plaster splints was a very important part of the after treatment as we could not expect a return of function until the deformity due to these contractures had been overcome.

Case II—W. N. aged ten years. On January 7, 1923 the patient fell backward striking on the left hand and elbow. In a very few minutes the parent noticed a great amount of swelling from the elbow to the middle third of the arm, the skin being very blue and tense.

The arm was immediately x-rayed and reported a supra condylar fracture of the left humerus. The next morning the fracture was reduced under an anesthetic and put up in the Jones position. Within a very few hours after being put in acute flexion the patient complained of a tingling sensation and a numbness on the dorsal surface of the thumb. Some ten days later the parent noticed a wrist drop but paid little attention to the deformity at that time supposing it to be due to the position of the arm in the dressing. At the end of three weeks the wrist drop was more pronounced and it was found that the little fellow could not extend the wrist, fingers or thumb. At the end of five weeks the Jones position was abandoned and a cock up splint was applied to the hand and was worn for three weeks without noticeable improvement. The parents, having noticed no change for the better in the condition and being discouraged with the treatment sought consultation.

Examination made on March 2, 1923 revealed the following: General examination of patient negative. Examination of left arm. The elbow was held in right angle flexion and there was about 50 degrees of motion present. There was a definite wrist drop with absolutely no power in the extensors of the wrist. The

proximal phalanges of the fingers could be extended movement being accomplished by the lumbricales and interossei muscles which are supplied by the ulnar nerve (Fig 805) The sensation was normal except over the dorsal surface of the thumb (radial distribution) where it was definitely depressed and over this area tingling sensations were noted There were no trophic changes of the skin or nails The Wassermann other blood tests and urine examination were negative The x ray taken at this time showed a perfectly reduced supracondylar fracture of the left humerus with very little callous formation

The character of the injury together with a paralysis of the extensor muscles of the wrist fingers and thumb (posterior interosseus nerve) and interference with sensation over the dorsum of the thumb (radial) indicated an injury to the musculospiral nerve (radial) above its division into the posterior interosseus and radial Exploration of the musculospiral nerve at the point of fracture was advised

Operation was performed on March 3 1923 The musculospiral nerve was exposed through a 4 inch incision over the inter



Fig 805 —The hand and arm at the time of operation showing the complete loss of extension of the wrist and the diminished movements in the fingers

space between the brachialis anticus and the brachioradialis. The nerve was found to be embedded in dense scar tissue from the point of its division into the posterior interosseus and radial upward for a distance of $2\frac{1}{4}$ inches. The nerve was stimulated with a weak current above the point of compression with no response in the muscles supplied demonstrating that there was interference with the conductivity of the nerve.

The nerve with considerable difficulty was dissected free from the scar tissue when it was found to be hard sclerotic and very much diminished in size. The sheath of the nerve was split and dissected free (neurolysis). This was over a distance as mentioned of $2\frac{1}{4}$ inches. The nerve was then buried in the fibers of the brachialis anticus muscle and the wound closed by layers. A cock up splint was applied with thumb completely extended and abducted.

Two days later patient claimed that the thumb felt natural for the first time since shortly after the injury. Within ten days the patient was able to hold his fingers in extension and slight contraction of the extensor muscles of the wrist could be felt. April 9th (thirty seven days after operation) as you see the patient he has complete return of function of the thumb about 75 per cent of normal extensor power in the fingers and about 25 per cent return of power in the extensors of the wrist (Figs 806-807). Sensations over the radial distribution are normal. Patient is still wearing cock up splint.

At operation there was no evidence that the nerve had been injured by the fractured ends of the bones. It was however completely surrounded and compressed by dense scar tissue which was responsible for the interference with its conductivity. As the first symptoms of nerve involvement were noted forty eight hours after the injury and the wrist drop came on even later we are justified in assuming that the nerve injury was a progressive one and due to pressure. We believe that this pressure was due to the extravasation of blood and exudate following the injury and that this pressure was probably increased when the elbow was placed in acute flexion.

If we bear in mind that even severe hemorrhage and much



Fig 806 —W \ After operation. Note the action and control of the fingers.



Fig 80 —W \ After operation. Note the action of the flexors and extensors of the wrist.

inflammatory exudate we can have a tremendous increase in pressure within the deep fascia which encloses the extremity in a complete fibrous envelope and if we remember also that the easily injured nerve trunks and fibers are exposed to this compressing force it is rational to conclude that definite and even permanent injury to the nerves may result. This is what seems to have happened in this case and what probably happens to a minor degree in many fractures. This condition is much more likely to complicate fractures in the vicinity of joints as here the nerve lies in closer proximity to the bone and is surrounded by tendons and dense fibrous tissue which allow little room for expansion. Later the replacement of the blood clot and exudate by scar tissue brings about further permanent compression and continued interference with the conductivity of the nerve or nerves involved. While it is possible under such conditions that recovery in part of an involved nerve may occur it is certain that the recovery will be extremely slow and probably incomplete. Operative interference after a reasonable time in such cases is clearly indicated as it shortens the convalescence by many months and probably results in a far more complete recovery.

Case III—Mrs. W. aged seventy years. On November 10 1919 patient fell forward on her right hand and forearm sustaining a fracture of the right wrist. Patient states that there was considerable swelling about the wrist and marked discoloration of the skin. *x* Ray plates taken at that time showed a typical Colles' fracture of the right wrist with only slight displacements of the fragments and no impaction. The fracture was reduced within a few hours of the injury and treated on a straight board splint for eight weeks without massage or manipulation. When the splint was removed the wrist was stiff painful and the patient had practically no use of the hand. She was then told to use the wrist which she attempted to do for several weeks with no improvement of function and increasing pain in the wrist which radiated into the fingers.

On January 27 1920 she consulted us and our examination is recorded as follows. Patient was a very healthy individual for

her age revealing no positive general physical findings of note. The right wrist showed marked limitation of motion chiefly dorsal flexion. All the phalangeal joints were stiff, swollen and painful. Passive movements of the wrist or finger joints caused the patient agonizing pain which originated in the wrist and shot upward into the forearm and down the hand into the fingers, particularly noticed in the little and ring fingers. While this pain was aggravated by motion, patient stated that she had constant pain day and night. The sensations over the hand and wrist were normal except a hyperesthesia of the little and ring fingers which evidenced itself by severe shooting pains when these members were touched.

x Ray taken at the time of this examination showed a complete reduction of the fracture; in fact the reposition of the fragments was so good that it would have been difficult to diagnose a fracture if the original plates had not been available.

It was thought best to observe this condition for a few weeks so the hand was put up in hyperextension and heat and massage used daily. This treatment was continued until May 8, 1920, a period of five months without improvement but on the contrary increasing pain which was of an intense shooting character and was chiefly localized in the little and ring fingers and on the dorsum of the wrist. The patient stated that the pain was constant and that she was getting no rest day or night. As the patient had not been under very close observation during the six weeks preceding, another examination was made.

The following additional findings were noted at this time. There was marked hyperesthesia over the little and ring fingers. Trophic changes were noted in the nails of all fingers but not on the thumb. The skin over the little and ring finger was smooth and presented a glazed or glossy appearance (Fig. 805). There was also some sweating which was confined to these two fingers. Slight atrophy of the hyperthenar eminence was noticed. The joints of the middle, ring and little fingers were very stiff and were held in slight flexion. On attempt of movement of these fingers the pain was very severe. No muscular paralysis was found. As the symptom indicated some involvement of the

ulnar nerve and probably of the median nerve also an exploration of the nerves at the wrist was advised.

At operation on May 26th the ulnar nerve was exposed at the wrist and was found to be compressed by a rather thick band of adhesions over an extent of about 1 inch. These adhesions were dissected free and the nerve when isolated was found to be definitely diminished in diameter at this point. The sheath was thickened and sclerotic. A neurolysis was done. The median nerve was then inspected through the same incision and was also found to be compressed by a much smaller band of adhesions. These were removed and a neurolysis of the con-

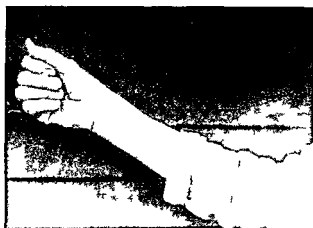


Fig 808—Show gth flex and f mty n th ca bef e pe t

stricted nerve was done. The incision was closed by layers. No splint was applied.

For three days following the operation the patient suffered intense pain throughout the entire hand and wrist. This rapidly subsided and when seen in August two months later the patient was practically well. There was no pain present over the old distribution but she did have an occasional shooting pain over the middle finger after prolonged use of the hand. The motions of the wrist were practically normal. The movements in all the fingers were good except some stiffness in the middle finger (Figs 809-810). She was using her hand freely and stated that she

was doing her own housework also knitting and crocheting. What little disability remained in the hand might well be considered as no more than would be expected from Colles' fracture in a woman of this age.



Fig. 809 — After operation. The range of flexion of the hand.

In the light of the symptoms and findings at operation what probably occurred in this case was the following. At the time of the fracture there was a large extravasation of blood and lymph. This was evidenced by the severe swelling and discoloration of the skin and impressed the patient from the onset. The arm was then treated on a flat splint for eight weeks without motion.



Fig. 810 — After operation. The range of extension of the hand.

The position and long immobilization favored an accumulation of hemorrhage and exudate on the palmar surface of the wrist and around the region of the median and ulnar nerves. As this exudate organized adhesions were formed about these nerves. The gradual contractions of these bands of fibrous tissue caused increased pressure on the nerves and an irritation of the fibers.

As a result we had the severe radiating pain which is always associated with pressure on a nerve or nerve trunk (causalgia). In this instance the pressure was not severe enough to cause an interruption of the conductivity of the nerve hence no muscle paralysis resulted. It was sufficient however to cause an irritation which expressed itself in pain and trophic disturbances as the shining skin, localized sweating and changes in the appearance of the nails.

This case was very instructive to us as it emphasized a condition commonly seen in war surgery where we have a distinct involvement of a nerve in an injury without muscle paralysis. This condition probably occurs in conjunction with fractures frequently but fortunately most of them recover spontaneously.

Case IV—Mrs. S. aged twenty four years. At the age of six years patient was struck on the right leg by a falling gate fracturing both bones of the leg at the junction of the middle and upper third. Within an hour the entire upper half of the leg was markedly swollen and very blue. No deformity of the foot or ankle was noticed at this time and it was thought that the injury was totally confined to the upper part of the leg. The family physician was immediately called, he reduced the fracture and placing lateral board splints on the leg. At the end of nine days the splints were removed at which time several large pressure sores were found in the upper third of the leg on the superior surface and on the sides. These became infected and a great deal of purulent material exuded for the next week or ten days. When the splints were removed patient says she noticed that the foot seemed to turn in and she did not have the muscular control of the foot that she should. She gave no history however at that time of sensory disturbances other than to say that foot seemed numb and lifeless. At that time she thought that the ankle had probably been dislocated in the accident. Without treatment other than rest and antiseptics to the pressure sores the fracture rapidly healed as also did the infected wounds and at the end of six weeks patient was told to walk but said she could not bear the weight of her body on this leg on account of

the inversion and weakness in her foot and ankle. She hobbled about for some months however with the aid of a crutch after which time a brace was applied to hold the ankle and foot. This she wore for twelve years. During the past six years patient has worn no support and she states that the inversion deformity of the foot has been gradually growing worse.

Examination of the patient on May 12th revealed a healthy young woman whose general and laboratory examinations were



Fig 811—The leg at the time of operation showing the deformity and the lack of motion



Fig 812—The x ray of this case at the time of examination



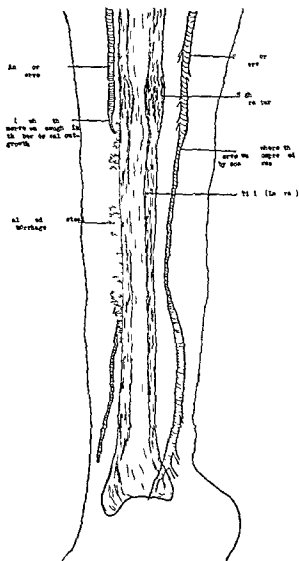
Fig 813—Note the period of growth

essentially negative. She walked with a lump and a rather marked equinovarus deformity was noted. There were three rather large scars on the upper third of the right leg the sites of the old pressure sores. The upper third of the leg was about normal in size but from the junction of the middle and the upper third down the leg was very small and withered and the foot was held in an equinovarus position (Fig. 811). The peroneal muscles were entirely paralyzed and no action could be obtained in the extensors of the toes or foot. There was slight power in the flexors of the toes and a moderate amount of action in the gastrocnemius and soleus. The heel tendon was markedly contracted. There was little sensory disturbance on the skin of the leg or foot. α Ray taken at this time showed a perfectly reduced fracture of the tibia and fibula at the junction of the middle and upper third. About 2 inches below the site of the fracture on the tibia was noticed a calcareous deposit which looked very much like a periosteal outgrowth and extended anteriorly and laterally over a length of 3 inches (Figs. 812-813).

Considering the history and the paralysis below the point of fracture a diagnosis of compressive trauma to the posterior and anterior tibial nerves was made and an exploration of these nerves was advised before considering any work on correcting the deformity of the foot.

Operation (May 16th). A linear incision was made on the outer side of the crest of the tibia (right) extending from the level of the fracture down about 8 inches. The anterior tibial muscle was so trophic that few fibers could be found. The anterior tibial nerve was dissected out in the upper portion of the incision and was found to be normal in size and consistency. The nerve was then followed down and gradually began to diminish in diameter and its consistency became firm. In the middle third the nerve turned abruptly inward and entered the bony growth which was noted on the α ray plate. This growth was hard flaky and seemed to be attached to the tibia but could easily be shelled out with the handle of the scalpel (Fig. 814). The nerve at this point was very small in diameter and the bony flakes seemed to be incorporated in the sheath. With great difficulty

the nerve was dissected out and followed on down. Below this growth the nerve was very small in diameter and flabby in consistency and dark in color. The nerve was dissected out 2 inches further, then after a neurolysis the nerve was transplanted in



F g 814 —A diagram made at the time of operation

the few remaining muscle-fibers of the anterior tibial. The incision was then closed by layers.

An incision was then made in the midriff from the junction of the middle and upper third running down 6 to 8 inches. The

incision was carried down through the atrophic gastrocnemius and soleus muscles and the posterior tibial nerve dissected out. As the nerve was followed down it diminished in size and became very sclerotic and the sheath was thick and fibrotic. Dense fibrous tissue enveloped the nerve just below the point of fracture and for a distance of about 2 inches. The nerve was dissected free from this tissue and a neurolysis done. The nerve was then transplanted into fibers of the posterior tibial muscle and the incision closed by layers.

Within three days patient had appreciably more power in the flexors of the toes and the heel tendon was very active. It is very doubtful whether this patient will gain much from this operative procedure as the muscles of the anterior leg were very atrophic. We do however expect some regeneration of the muscles of the leg.

This patient is shown as an extreme case demonstrating what marked deformity can occur following an injury to a nerve or nerves resulting from a fracture. The symptoms of nerve injury came on very early in this case eight days after the accident and if they had been recognized at that time it is almost certain that this young lady would not have suffered this crippling deformity. The compressive trauma in this case was undoubtedly due to hemorrhage as the nerves were compressed below the site of the fracture. The compression of the anterior tibial was doubtless due to an organized periosteal blood clot which became calcified (Fig. 815).

Considering these 4 cases as typical of injuries which peripheral nerves may suffer in association with fractures there are several points they suggest which we might properly emphasize.

First Three of the injuries were in the neighborhood of a joint the elbow in the first two cases and the wrist in the third case. Our experience leads us to conclude that fractures near a joint are more likely to be complicated by nerve injuries than those along the shaft of bones. The majority of nerve injuries we have seen have been found in fractures about the elbow with some very interesting ones associated with wrist fractures.

When we recall that the large nerves and arterial trunks lie

in closer proximity to the bones in the joint region than they do along the shaft (except the musculospiral) that fractures in the region of joints are usually due to direct and severe trauma and that here the nerve and arterial trunks are surrounded by compact and firm tendons structures which do not permit of much expansion in the presence of a large hemorrhage and exudate we have a rational explanation of the compressive injury which may occur

Second How long should we wait before exploring nerves which have been injured in conjunction with fractures? While we do not advocate the ruthless exploration of every fracture which is accompanied by signs of nerve injury as many of the mild cases recover spontaneously we do believe that there has been too much tendency to follow a waiting policy in such cases as you will note in Cases III and IV In Case III the woman was allowed to undergo a great deal of pain needlessly for observation and we have now come to the conclusion (this being one of our first cases) that the waiting policy is needless after a definite diagnosis is made It seems rational that given a fracture with definite



Fig. 915.—Patient after operation. The deformity of the foot was corrected.

given a fracture with definite

signs of nerve involvement of such a character as to cause distinct interference with the function of the part or to cause severe pain a month or two at the outside is all the time that should be allowed to elapse before exploring the nerve unless there has been very definite signs of improvement. If there has been a real injury to the nerve there is nothing to be gained by procrastination. Delay will only allow of a more extensive degeneration of a nerve and trophic changes in the muscles with a very prolonged and probably permanent disability. If sufficient pathology is not found to require neurolysis or nerve suture no harm has been done and definite assurance can be given the patient of his ultimate recovery.

Third. The economic importance of peripheral nerve injuries with fractures is great. If the nerve lesion is overlooked an injury which properly treated should incapacitate only a few months may result in many months of disability and perhaps a permanent one. One hesitates to estimate the amount of money expended each year in compensation and medical care in cases where nerve injuries have been overlooked. Too often the attending physician focuses his attention upon the displacement of the fractured bones and their anatomic reposition as shown by the x ray. In doing this he fails to carefully examine the injured part for associated nerve injuries with the result that when the dressings are removed he finds an impaired extremity with months of treatment and probably operative interference necessary before a useful part can be secured.

Let us then get accustomed to looking at a fractured extremity as an injured part which is made up of muscles, blood vessels and nerves as well as bone and to treat it not to get an anatomic reposition of the fracture but to get a good functioning member.

AN OPERATION FOR THE RELIEF OF ANKYLOSIS OF THE HIP JOINT

Miss C. aged thirty four years This patient presented herself for an examination to ascertain whether she could gain any relief from disability due to ankylosis of the right hip Her history was as follows The trouble began at the age of four years with pain in the right hip The pain gradually grew worse and she began to limp Tuberculosis of the right hip was diagnosed and she was put on an extension hip joint brace She wore the brace for some time and then as the hip improved the brace was discarded When patient was seven years old the hip had contracted into a position of adduction and flexion and was bothering her in her walking so she was taken to a surgeon who operated upon her As nearly as can be determined the adductor tendons were divided and the limb put up in plaster in abduction Plaster cast was left on for six months and when it was removed there was considerable improvement in the position of the hip As time went on however the deformity gradually returned and became so marked that she was compelled to wear an extension shoe which she has worn for twenty years

Examination on April 6 1922 Patient was a well nourished healthy adult who walks with a marked limp Her occupation was that of a school teacher which necessitated her being on her feet for a large part of the day While she could get about well with an extension shoe and by using a cane her right limb became very tired and she had so much pain and backache at the end of the day that she feared she would have to give up her position There was no pain in the hip joint other than that due to the position in which she walked Heart lungs and kidneys normal All blood tests and urine examinations negative

Examination of right hip The right hip joint was ankylosed in a position of 70 degrees flexion and 40 degrees adduction The right leg was about 6 inches shorter than the left although it

was impossible to give exact measurements because of the extreme deformity. She was wearing a 5 inch extension shoe.

Examination of spine. When standing a definite lordosis and a marked left lumbar and slight right dorsal spinal curvature was present. The whole lumbar region was tender and there was marked spasm of the spinal muscles. Patient limped very



Fig 816 — R y th c e b f pe at N t th m p l t b o y k y l

distinctly in walking and each step caused a certain amount of discomfort after some exertion. X Ray of the hip showed a complete destruction of the head of the right femur and bony ankylosis with the pelvis (Fig 816).

This case presented the problem of attempting to relieve severe pain in the right side and back which was becoming severe

enough to threaten her ability to earn her livelihood. It was explained to the patient that the back pain which was really her gravest symptom was due to the distortion of the spine which in turn was dependent upon the deformity of the hip-joint. She was informed that the only way in which this could be overcome would be by an operative procedure upon the ankylosed hip joint with the idea of correcting its position.

Three procedures were considered: one a subtrochanteric osteotomy, two arthroplasty upon the hip-joint, three the formation of a new joint below the site of the original joint in the trochanteric region. The objection to the first method was that if successful it would leave her with a straight stiff hip which would make sitting at a desk difficult and cause considerable back strain, the very condition we wished to eliminate. The second procedure presented grave difficulties as the destruction of the head was so complete as to leave little material for forming a new one and in addition it did not seem advisable to do an arthroplasty upon a tuberculous joint as there might be a possibility of relighting up the old process. The third procedure that is forming a pseudarthrosis in the trochanteric region seemed the most promising as it would overcome the flexion and adduction, decrease the shortening to a large extent and give her a movable joint if successful. The possibilities of the operation as to success and failure were explained to the patient and he willingly submitted to the operation.

Operation (July 10, 1922). The hip was exposed by an incision running from the anterosuperior spine to the posterior portion of the great trochanter and then passing downward along the posterior margin of the femur making an oblique angle. This incision allowed the head and neck of the femur to be easily exposed by working down between the gluteus medius and tensor fascia femoris. The incision was then prolonged upward and backward to the upper margin of the great trochanter. The tip of the trochanter with its attached muscle, the gluteus medius and minimus, was then removed with the rectus abdominis turned back (Fig. 817). An osteotomy through the trochanter was then done in the form of an arc of a circle of $\frac{1}{2}$ to $\frac{3}{4}$ inch

of bone being removed. The adductors were then divided subcutaneously and the leg brought down into complete extension and



1 A large incision of the hip joint was made drawn from the x-ray plate. Note the first cut of the joint and the third of the femur. Complete bony ankylosis.

2 The great trochanter with the insertion of the gluteal muscles is turned back.

3 At that time the femur was removed and the bone end smoothed and a joint fashioned.

4 A half inch then turned down and the piece of Berner membrane inserted between the ends of the bones.

5 The great trochanter then made fast to the upper part of the femur. The ligament put in position with about 15 pounds of tension.

Fig 817—The steps of the procedure

abduction. The bone surfaces were then carefully rounded off and a shelf turned down from the upper fragment to afford a

more cup shaped articular surface. A piece of Baer's membrane was then carefully sutured around the distal fragment which now corresponded to the head of the femur without any neck. The tip of the trochanter with its attached muscles was next brought down and fastened to the distal fragment and the incision



Fig. 818.—The x ray plate after operation

closed by layers. A drain of rubber tissue was put in and left two days.

The patient was immediately put upon a Bradford frame with 12 pounds of traction with the leg in abduction. Stitches were removed in eight days and incision closed entirely except at one point where there was a little drainage. Passive motion was begun on the tenth day. By the beginning of the third week the patient commenced to move the hip herself and from this time

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THE
SURGICAL CLINICS
OF
NORTH AMERICA

VOLUME 3 1923
WITH 818 ILLUSTRATIONS

PHILADELPHIA AND LONDON
W B SAUNDERS COMPANY

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PUBLISHED SIX TIMES A YEAR (SIX NUMBERS A YEAR) BY W B SAUNDERS COMPANY WEST WASHINGTON
SQUARE, PHILADELPHIA
MADE IN U. S. A.

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